

Dr. Hans-Martin Hirt  
Dr. Keith Lindsey  
Dr. Katharina Madrid

# **NATURAL MEDICINE IN THE TROPICS II**

## **TREATMENTS**



**Treatment of common ailments and uses of some important  
plants in the Tropics.**

A seminar handbook



This edition has greatly benefited from the active collaboration of anamed groups in the following countries: Angola, Benin, Burundi, Cameroon, D. R. Congo, Eritrea, Ethiopia, Ghana, Haiti, India, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Philippines, South Africa, Senegal, Sudan, Tanzania, Togo, Uganda, Ukraine, Zambia, Zimbabwe.....

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This book has been also translated into French, Portuguese, Swahili, Amharic, Luo, Ateso, Hausa and Chichewa. As these books have been printed at different times, you may find differences in the recommended treatments or in the recipes to prepare medicines; in this case, please use always our latest edition. This book has also been printed in Kenya, Malawi, India, Senegal, Congo and Uganda.

The colour poster (*anamed* order no. 403) illustrates all the plants described in this book. Other books in this series “Natural Medicine in the Tropics” are I Foundation Text, III Teachers Resource Kit and IV AIDS and Natural Medicine.

All these books and other materials may be ordered from anamed-edition, Schafweide 77, D-71364 Winnenden, Germany.

Email: [info@anamed-edition.com](mailto:info@anamed-edition.com).

Homepage: [www.anamed-edition.com](http://www.anamed-edition.com)

Hans-Martin Hirt founded the network “anamed international” in 1985 and is still the Coordinator. Homepage of the association: [www.anamed.org](http://www.anamed.org)

Katharina Madrid is a specialist for tropical agriculture. She has joined anamed in 2009 and is a trainer for international seminars.

Keith Lindsey worked with anamed for many years and in 2014 founded Discover. Discover also runs training seminars. Homepage: [www.discover-src.net](http://www.discover-src.net)



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## **Natural Medicine in the Tropics II TREATMENTS:**

### **Handbook for a week-long seminar in Natural Medicine**

*anamed* (Action for Natural Medicine) is a Christian organisation and network that aims to enable people in the Tropics to become as self-reliant as possible, particularly regarding their health. *anamed* works with people of all faiths who are committed to improving the health care of their neighbours, region and country.

*anamed* achieves this aim by listening to traditional healers, conducting its own research and developing reliable treatments for many health complaints, with detailed information about dosages and side-effects. The series of books "Natural Medicine in the Tropics" present the results of this work. Since 1985, we have made all our knowledge about health and healing using plants freely available to the public. We have no secrets, and certainly no patents!

We want as many people as possible to benefit from this knowledge. To this end, *anamed* runs week-long seminars in "Natural Medicine" for health workers, doctors, traditional healers, religious leaders, community workers and other active members of the community in Africa and Asia. The training includes the recognition and cultivation of some well-known healing plants, the preparation of medicines from these plants, and their use in the treatment of common health problems and diseases. The essentials of nutrition and hygiene are also covered in detail, to help people not to become ill at all!

This seminar handbook has already been used in countless training seminars in tropical countries. Thousands of people today enjoy better health because of these treatments.

We define "Natural Medicine" as being the combination of the advantages of traditional herbal medicine, such as the use of locally available medicinal plants, with those of scientifically based modern medical practice, such as hygiene and accurate dosages.

Once you have attended a seminar, please keep in touch with others in your region and country who also practise Natural Medicine. Organise exchange visits, run your own training events, and let *anamed international* in Germany know about your successes! Thank you!

## **Section I and Chapter 1: Prevention of Common Ailments**

Non-communicable diseases (NCDs) are the leading cause of death globally. In January 2017 the World Health Organisation released a rather alarming report. They said NCD deaths are projected to increase by 15% globally between 2010 and 2020 (to 44 million deaths). In Africa, the increase will be even more, over 20%, and by 2020 NCDs will cause around 3.9 million deaths. **DISCUSS THIS!**

Non-communicable diseases (NCDs), or “lifestyle” diseases, include high blood pressure, heart problems, diabetes and cancer. They are caused by physical inactivity, unhealthy diet, tobacco and other drug use, alcohol abuse, pollution and stress. This means they are preventable!

This is a challenge to us all! When we (the authors) visited Africa 20 or 30 years ago, we never heard people complaining of diabetes or cancer. Now these diseases are widespread!

### **1.1 What is a healthy diet?**

A diet that includes vitamins, minerals, proteins and carbohydrates.

A diet that does not include much sugar, salt, fats or fast foods, and which contains no fizzy drinks.

In detail: Vitamins and minerals are present in green leafy vegetables, root vegetables and all fruits. Proteins are present in nuts, eggs, fish, beans, lentils, soya and grains such as millet and sorghum. They are also present in meat, though for many reasons it is good to reduce meat consumption. Carbohydrates, which give energy, are present in potatoes, rice, cassava, wholemeal maize.

Moringa leaf powder and grain amaranth are remarkable, because they contain a wide range of vitamins, minerals and proteins, which is rather unusual in food from plants.

If possible, grow your own fruit and vegetables - organically. This keeps the soil, the plants and you and your family healthy. The use and abuse of pesticides has resulted in many items sold on market stalls being dangerously contaminated.

Breast feed your babies - don't be tempted by advertisements for bottle feeding. Dirt and infections are very easily taken in by babies via their bottles, which lead to diarrhoea and other illnesses. Commercial baby food weakens both your child and your household economy!

Over the past decades eating habits have changed enormously. Our intake of sugar, fats and salt has increased without our realising. Many families spend less time in the kitchen preparing nutritious meals and rely much more on snacks from shops or roadside stalls. This is convenient, but an enormous mistake. Even white bread, popular as it is, is bad news – it is made of highly refined flour (this means impoverished!) and often even contains refined white sugar.

### **1.2 Look after your water**

Make sure that the water you drink is clean. To purify water for drinking, you may construct a sand-filter, use crushed moringa seeds as described in Chapter 11, or boil the

water. Work with your neighbours to ensure that your rivers remain clean. That means keeping them free of rubbish, and making sure that no-one washes their clothes, bicycles or cars in water that is used for drinking.

### **1.3 Keep your soil fertile - naturally.**

- a) **Plant leguminous crops** (which naturally put nitrogen into the soil). Leguminous crops include vegetables such as beans and ground nuts, and trees such as leucaena.
- b) **Compost** your waste organic material. All waste fruit skins, vegetable leaves, garden waste (but avoid seeds of weeds), chicken and other animal manure should be made into a heap (not too close to the house). If kept warm and moist, good black earth will be produced within about 3 months. Hoe this into your garden, and nutrients (nitrogen and minerals) will be slowly released into the soil.
- c) Use **mulch** generously – see Chapter 15.
- d) **Avoid the use of agricultural chemicals.** Use either no or an absolute minimum of artificial fertilisers or pesticides. They pollute water, kill harmless (and often valuable) plant and animal life, and harm the natural fertility of the soil.

### **1.4 Traditional toilets are clean and practical!**

Faeces and urine can be sources of many infections. Dig a pit, and build a house over it. The toilet hole should always be covered. If you install a "chimney" which takes air from the pit and through the roof, it will not smell. When the toilet is nearly full, cover the pit with some soil and plant a mango tree! Then make a new traditional toilet in another spot. Traditional toilets preserve the nutrients in the earth for future agriculture, whereas water toilets cause streams and rivers to become polluted. And they use less water, which is in many places an increasingly scarce resource. Therefore, traditional toilets are often cleaner and more adapted to tropical conditions!

### **1.5 Dispose of waste carefully!**

In many towns one can see "eternal fires", which seldom go out and onto which all rubbish, including plastics and metals, is thrown. This is dangerous for the environment and your health. If PVC and aluminium waste is burnt together on a low temperature, very poisonous gases called dioxins are released. Rubbish lying around looks bad, sharp edges can cut the flesh, batteries and electrical components are toxic. Rainwater collects in old plastic bags and old tyres and provides breeding sites for malaria mosquitoes.

Therefore, dispose of your waste as follows. Once you have become used to separating your waste in this way at home, introduce this system in your village or even your town.

- a) **GREEN BUCKET** for fruit and vegetable waste, which should then be put on the compost heap. Food scraps should be fed to the chickens so that rats and snakes do not hide in the compost.
- b) **BLUE BUCKET** for paper: Burn it once a week. When burning well, add burnable plastic. Bury the ash deeply.
- c) **RED BUCKET** for metal, glass, PVC-plastic, batteries and other non-degradable materials. Do your best to recycle these things. If recycling is totally impossible, bury

these items deeply. Batteries are particularly toxic. Don't plant your vegetables or fruit trees over the pit! Campaign for recycling scheme for glass, PET bottles, metals and paper.

d) Wood. Burn it and put the ash onto the garden - it contains valuable minerals.

### **1.6 Plastic bags**

Some African countries now forbid the use of plastic bags. That is good news! In the towns plastic waste litters the entire environment and blocks the drains, which leads to flooding when it rains heavily. On the farms plastic bags are eaten by cows and goats, which often die as a result. Even children may die after playing with plastic bags or bottles infected by saliva or faeces of infected persons.

### **1.7 Cleanliness and hygiene.**

Always wash your hands with soap and running water before eating or preparing food, and after using the toilet. If you have no soap, make it yourself, or rub your hands with water and pawpaw leaves.

Washing oneself from head to toe each evening keeps both the body and the bed clean.

### **1.8 For cooking indoors, install a chimney!**

If you are frequently in a room filled with smoke, then you run a strong risk of developing serious eye problems and lung diseases. The best solution to the problem is to build a fuel-efficient stove (which would mean fewer trips for firewood) with a chimney.

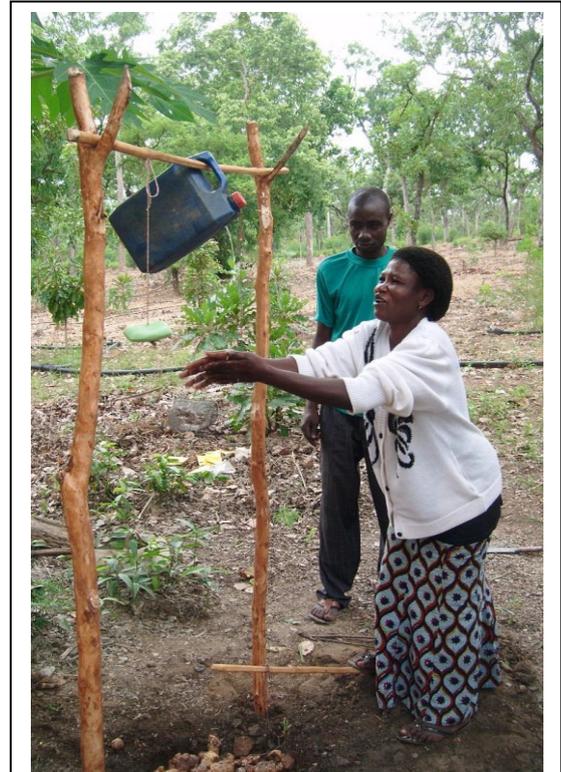
### **1.9 Exercise and fitness.**

Some people have too much exercise, e.g. women who walk many kilometres each day to collect water and firewood. Others have too little. Is your family "developed" or "undeveloped"? In "developed" families, the man and woman share the physical work, and so have similar exercise. In this way the wife does not suffer back problems, and the husband is not too large!

Keep yourself fit; you will be healthier and better able to resist disease.

### **1.10 Avoid road accidents.**

Too many people die or are injured on the roads. This is one of the biggest risk to health in Africa. Campaign for safety checks on vehicles, policed speed limits, pavements for pedestrians and cycle lanes in urban areas, and controls on exhaust emissions.



Making a tippy-tap is an essential activity in a seminar. There should be a tippy tap outside every toilet. Where tippy taps have been set up outside school toilets, the rate of diarrhoea and other stomach problems has declined significantly.

## Section II: Treatment of Common Ailments

### Chapter 2. Wounds, burns, boils and abscesses

Use the best quality bandage you have. In a crisis, if you require a dressing but have no bandage, take strips of cloth, preferably cotton. To disinfect them, boil them in water for 20 minutes and dry them in a clean solar oven, or if no solar oven is available, on a clothes-line in the sun.

#### Treatment of wounds, burns and abscesses - summary

Disease or complaint		First choice	Second choice	Third choice
Wounds	Fresh wounds	Sugar dressing	Honey dressing	Ripe pawpaw dressing
	Infected wounds	Pawpaw sugar	Alternate unripe pawpaw and sugar dressing	Guava leaf paste
Burns	Fresh burns	Aloe gel	Salt water	Wash with guava tea
	Infected burns -	Pawpaw latex water with salt	Aloe gel	Onion ointment
Abscess	Closed	Pounded garlic	Chilli ointment	Pounded onion
	Open abscess	Pawpaw sugar	Alternate unripe pawpaw and sugar dressing	Guava leaf paste

#### A. Wounds

The main purpose of treatment is to prevent the wound from becoming infected, and thus to allow the natural healing processes of the body to work as well as possible.

##### First wash the wound.

##### If the wound is clean:

- Use either
- i) cool, boiled water with a little salt, or
  - ii) guava tea:

**Guava tea:** Gently boil one handful of fresh and washed guava leaves in at least 1 litre of water in a covered pot for 15 minutes. Allow to cool and filter. Immediately after filtering, bathe the wound with this tea. Make fresh tea every time it is needed.

##### If the wound shows any sign of infection, use “pawpaw latex water”.

**Pawpaw latex water:** If the burn is dirty, bathe it several times a day, each time with freshly made "pawpaw latex water" with salt. Put a cloth in boiling water, and use it while it is still very hot to wash an unripe fruit that is still hanging on the tree. Fill a container with one litre of cool, boiled water. Add one tablespoonful of salt, and stir to dissolve. Now make vertical cuts in the skin of this green fruit, hold the container directly under the fruit and collect 3 to 5 drops of sap in the water. See the picture on the front cover. When using the unripe pawpaw, do not remove the fruit from the

plant, because then the sap dries up very quickly. Leave the fruit on the plant, and you can return to use it again time after time.

## **A.1. Open, clean, fresh wounds with no pus**

### **A.1.a. Sugar alone**

Place a heap of sugar over the wound. Use a simple bandage to keep the sugar in place. The sugar draws the moisture out of the microbes by a process known as osmosis, and the microbes die. Dress the wound three times each day; do not wash again, simply add more sugar.

### **A.1.b. Honey / sugar mixture**

The honey must be pure. The best way is to buy a honeycomb, and extract the honey yourself. This is done in the following way: Mash the honeycomb. This can be done using a new mortar or a meat chopper with the grinding disk removed. You may prefer to do this after dark, to avoid being attacked by bees! Spread the mass on a piece of clean cotton cloth which is secured with string to the top of a clean metal bowl. Place this in a solar oven for one day until the honey and wax have dripped through. They will form separate layers. In the evening open the solar oven and remove the wax and honey, which may be used later for making ointments (see Chapter 12).

The honey is now ready for use. Apply a mixture of equal amounts of sugar and honey. The sugar prevents the honey from becoming too runny. Honey is anti-bacterial, and leaves the wound quite clean. The wound should be treated with the honey / sugar mixture several times a day, without washing it again.

### **A.1.c. Ripe pawpaw (*Carica papaya*)**

Place a soft slice of a nearly ripe pawpaw over the wound.

## **A.2. Infected wounds, open boils and old, open wounds**

### **Pawpaw (*Carica papaya*)**

With the following pawpaw preparations, wounds that have been open for years have been healed, usually in even less than one week. This is one of many examples in which Natural Medicine is superior to commercial pharmaceuticals.

Use the following pawpaw preparations until the wound is free from pus. Thereafter dress the wound with pure sugar or sugar / honey mixture.

#### **A.2.a. “Pawpaw sugar”**

Mix ten grams of sugar (use an extremely clean container) with ten drops of sap from an unripe pawpaw. Make this fresh every day. By “pure” sugar we mean sugar that is taken directly from a new bag from the sugar factory. Apply plenty of this pawpaw sugar to the wound, and as soon as the mixture becomes damp, add more. The wound may require attention in this way several times a day.

#### **A.2.b. Unripe pawpaw**

- i) Slices:** Put a cloth in boiling water, and while it is still very hot wash an unripe fruit thoroughly **that is still hanging on the tree**. Clean a knife, put it for some minutes in boiling water, and then cut a slice of the pawpaw the thickness of a child's little finger. Lay that over the wound, and secure it with a bandage. Leave it for four

hours. If it causes much pain, remove it sooner. Administer this treatment 3 times a day for several days until all the pus has disappeared. Alternate this treatment with the sugar treatment. After each sugar treatment, return to the tree, discard the first thin slice of the pawpaw which is now dirty, then apply the next slice to the wound.

**ii) Sticks:** Narrow, deep wounds sometimes occur, for example, on the back of bed-ridden patients. Under sterile conditions, a hospital may cut long, thin pieces of unripe pawpaw and insert them into the wound.

#### **A.2.c. Guava leaf paste (*Psidium guajava*)**

This treatment costs absolutely nothing, and is therefore available to all those who simply cannot afford to buy even the cheapest medicine. Pound one handful of fresh and washed guava leaves. Boil them gently with a cup of water in a covered pot for 15 minutes. Allow this paste to cool. Apply this paste to the wound and secure it. Repeat this procedure morning and evening.

#### **A.2.d. Ripe pawpaw.**

Place a spoon and dish in boiling water for 10 minutes, and then use them to mash the flesh of an almost ripe pawpaw and to spread this paste over the wound. Repeat the entire procedure morning, noon and evening. The more infected the wound, the less ripe should be the pawpaw.

#### **A.2.e. Aloe gel**

For old, open wounds that refuse to heal, fill the wound with aloe gel taken directly from a fresh leaf three times a day.

#### **A.2.f. Garlic oil**

Use garlic (*Allium sativum*) oil, see Chapter 7.5. Apply several times a day. To make a small quantity of garlic oil, mix one tablespoon of finely chopped garlic with two tablespoons of vegetable oil. Put in a glass container and shake well. Use within 24 hours.

**A.2.g. Onion (*Allium cepa*) oil or ointment:** See Chapter 12.

**A.2.h.** For suppurating wounds and boils, **use a black stone** (See Chapter 13).

### **B. Burns**

#### **B.1. Fresh burns**

First cool the wound with clean, cold water. Again, the main purpose of treatment is to prevent infection. Keep the patient under a mosquito net to keep the flies away from the wound.

##### **B.1.a. *Aloe barbadensis* = *Aloe vera*.**

Thoroughly wash a leaf without removing it. Now cut it off the plant. Clean a sharp knife and put it in boiling water. With this knife, cut the exposed end again so that it is absolutely clean, and also cut off the thorny edges. Then cut through the middle to expose a large surface of gel from the inside of the leaf. Rub the juicy side of the aloe leaf all over the burn. Repeat several times per day. Keep the patient under a mosquito net to keep the flies away. Aloe works as a disinfectant and anti-inflammatory.

### **B.1.b. Table salt**

Dissolve 9g (one heaped tablespoonful) of table salt in 1 litre of water, boil for 20 minutes in a covered pot and leave to cool. Pour this solution over the burn several times a day. If the burn is very deep, wrap a bandage or sterilised cloth over the burn. Several times a day pour this salt solution over the cloth. A few drops of sap from the unripe pawpaw may be added if the burn looks particularly nasty. In emergency, if you have no salt available, boil and use the patient's urine! Urine contains salts.

### **B.1.c. Guava tea (*Psidium guajava*)**

Make guava tea as described under A above, and bathe the burn with this tea 3 times a day. Make fresh tea every time it is needed.

**B.1.d. Onion oil or ointment:** See Chapter 12.

## **B.2. Infected burns**

### **Pawpaw latex water with salt.**

Wash the burn with pawpaw latex water as described under A above.

Then use the recipes for fresh burns above, **Aloe gel** (See B.1.a) or **Onion ointment** (See B.1.d).

## **C. Abscesses**

An abscess is an infection that forms a small pocket of pus under the skin.

### **C.1. Closed abscesses. Pus under the skin (including blind boils, closed wounds, infections of the skin surrounding the finger or toe nails etc.)**

#### **C.1.a. Garlic (*Allium sativum*)**

- a) cut slices of garlic and bandage them on (do this overnight for several nights), or
- a) pound the garlic and swab the affected area, or
- b) use garlic oil (see Chapter 7).

Garlic is very strong, much stronger than onion. Be careful, a patient with sensitive skin might suffer the side effect of the skin burning or becoming discoloured. To bandage garlic to the skin is the most effective method, but also the most aggressive. Swabbing the skin with garlic oil is both a bit less effective but also less aggressive.

**C.1.b. Chilli ointment:** See Chapter 12.

**C.1.c. Onion (*Allium cepa*).** Use as for garlic above (C.1.a.). Instead of garlic oil, use onion ointment (see Chapter 12). Onion ointment is milder than garlic treatments.

### **C.2. Open abscesses.**

Treat as infected wounds, see A.2. above.

## Chapter 3. Skin disorders

### A. Introduction: General skin care and hygiene

Make and use soap that nourishes the skin. For washing, use home-made cream soap, made as follows: Take 4 units of curd soap (this is the name for normal soap, whether commercial or home-made), 1 unit of vegetable oil and 1 unit of water. Pound the soap, and mix with the oil and water. Heat the mixture slowly until the soap melts and dissolves. Stir the mixture until it is cool, and pour into moulds. Leave for two weeks before use. This soap can be 'medicated' by adding a few drops of neem oil, or some dried and pounded leaves of neem or moringa, before pouring it into the moulds.

### B. Skin disorders of unknown origin

Drink a lot of herbal teas, especially hibiscus or artemisia, to detoxify the body. They help to purify the blood, and soften the contents of the colon, enabling them to be passed out into the toilet. Impurities in the body can cause rashes and bad skin.

When treating the skin, start with the most gentle treatments which nourish the skin (listed first), and steadily progress to the more disinfectant but also more aggressive treatments, that have more side-effects:

- *Persea americana* (avocado): The flesh of a ripe avocado nourishes infected or dry skin and makes the skin more beautiful. Mix the flesh of a ripe avocado with some drops of lemon juice and cover the skin for 12 hours each day, e.g. overnight. This dressing must always be used very soon after being prepared.
- Vegetable oils, such as palm kernel oil, sunflower oil, groundnut oil: Mix one teaspoonful of the oil with one teaspoonful of water in the palm of your hand. Rub on the affected area.
- Aloe gel: See Chapter 2.
- *Brassica oleracea* (cabbage): Make a bandage from a washed cabbage leaf, and wrap around the affected area. In Nigeria, a baby woke 4 times every night with bleeding, dry skin. Wrapping a cabbage leaf around the affected area gave immediate relief.
- Oil or ointments made from vegetable oil and plants such as guava, chamomile or artemisia: For the recipes see Chapter 12.
- Castor oil (from *Ricinus communis*), either made commercially, made traditionally in the village or made following the recipe in Natural Medicine in the Tropics I.
- *Cassia alata* (ringworm bush): Make a paste with pounded leaves and oil.
- *Azadirachta indica* (neem): Use as leaf paste with oil or water, or ointment made from the leaves, or neem seed oil.
- *Allium cepa* (onion): As oil or ointment. See Chapter 12.
- *Capsicum frutescens* (chilli): Rub chilli oil or ointment over the affected area – chilli has disinfectant properties and sometimes relieves itching. See Chapter 12.
- *Allium sativum* (garlic - as garlic oil): See Chapter 7.
- 'Scabies oil'. The 50:50 mixture of kerosene and vegetable oil is not only used for scabies, but also other complaints, e.g. itching caused by filariasis. See below.
- *Allium sativum* (garlic). Rub a slice of garlic over, or secure it to, the affected area.

## C. Fungal infections

Fungal infections can occur on any part of the body, but are found most frequently between the toes (athlete's foot) or fingers, and between the legs. Ringworm (round white patches on the scalp) is also a fungal infection. Wash the affected areas every day with soap and water. Keep these areas dry and treat them as described below. If possible, expose them to fresh air and sunlight. Wear clothes made from natural materials, i.e. cotton. Always continue the treatment for two weeks after the symptoms disappear.

**C.1 Garlic (*Allium sativum*):** Rub garlic oil (See Chapter 7.6) on the affected area. For athlete's foot you may put a fresh clove of garlic between the toes!

**C.2 Ringworm bush (*Cassia alata*) and castor or palm oil:** Mix 10 spoonfuls of fresh, pounded leaves of *Cassia alata* with one spoonful of castor oil (or palm oil or another vegetable oil). Apply three times a day. Make fresh every day. If you have no oil at all, pound fresh leaves and rub them on the affected area three times a day.

**C.3 Ringworm bush (*Cassia alata*), pawpaw and oil:** Pound one handful young fresh leaves from the ringworm bush, add ten drops of sap from an unripe pawpaw and a tablespoon of castor oil or palm oil. Mix, and rub the affected area three times daily. Make a fresh mixture each morning.

**C.4 Anti-fungal ointment:** Use neem, melia or ringworm bush, see Chapter 12.

## D. Scabies

Scabies is characterised by itchy little bumps that can appear all over the body. On the bumps are tiny pin-head sized dark scabs. Scabies is particularly common in children. It is most often found between the fingers, on the wrists, around the waist and on the genitals. It is caused by little mites that make tunnels under the skin. It is extremely infectious, if one member of the family has scabies, the whole family should be treated. Cleanliness is essential. Wash the entire body and change your clothes once every day. All clothes and bedding should be washed, and hung out in the sun. A quicker method is to put them in a solar oven to disinfect them. Wash the metal or wooden parts of your bed with kerosene (such as is used in kerosene lamps).

**D.1 Kerosene (paraffin) and vegetable oil – “scabies oil”:** Mix one cup of kerosene (sometimes called paraffin) with one cup of vegetable oil. Twice each day, and for 2 to 3 days, wash the whole body and apply scabies oil to the affected areas. This *anamed* recipe has now been adopted by many clinics. This treatment is also good for itching caused by filariasis (tiny filariae worms in the blood). The filariae move to other parts of the body. Keep kerosene and this scabies oil away from fire and from children!

**D.2 Garlic oil (*Allium sativum*):** See C.1 above.

**D.3 Neem (*Azadirachta indica*):** See Chapter 9.

**D.4 Other plants:** For adult patients with scabies only on a limited area, with no money to buy kerosene, and if garlic and neem are both unavailable, there are three possibilities: The least toxic is *Tephrosia vogelii*. The second choice is *Rauwolfia vomitoria* (which is more toxic) and the third is *Nicotiana tabacum* (tobacco) which is the most toxic. The procedure for each plant is to rub clean, older leaves on the lesions. Alternatively, it is gentler on the skin to pound the leaves and to mix them with a little vegetable oil. Rub this mixture on the affected area three times a day. Prepare fresh every day. Be careful, most of these plants are toxic!

## Chapter 4. Diarrhoea

A person has diarrhoea when the stools are watery. If the stools also contain mucus and blood, the problem is called dysentery.

Diarrhoea is a serious disease. It is responsible for the deaths of over three million children a year in developing countries. Almost none of these children need to die – if only their parents and even the clinics knew the treatments described in this chapter. Diarrhoea is particularly dangerous in children who are undernourished.

Diarrhoea may also be a symptom of other diseases, which also need treatment, see Table 4.1 below. If you go to the toilet only once, but stay there all day long, you have cholera!

When children have diarrhoea, always give ORS (oral rehydration solution)! Adults may first like to try simpler recipes such as medicinal charcoal, unripe guava fruits, or a decoction made out of guava leaves. But if the diarrhoea persists, or for serious cases, ORS is an absolute MUST for adults also!!! The patient must also continue to eat foods which provide enough vitamins and minerals.

Diarrhoea can often be prevented, particularly by paying close attention to cleanliness.

### 4.1 How to prevent diarrhoea

- a) Wash your hands with soap (or pawpaw leaves) and running water before eating and after using the toilet.
- b) Do not use baby bottles or traditional enemas with young children - both carry a high risk of infection. Breast feeding is best!
- c) Always dispose of the stools of babies and young children in the toilet.
- d) Shower every evening and sleep in a clean place.
- e) Both adults and children must use the toilet for both defecating and urinating. The hole of the toilet should always be closed with a cover to prevent flies spreading infections from faeces to food. Fight against customs and traditions that condemn the use of toilets. Always throw used toilet paper into the hole, never in a basket, as flies may transfer many diseases by this dangerous custom.
- f) Eat a good, balanced diet with carbohydrates (e.g. maize or millet), proteins (e.g. meat or eggs) and vitamins (e.g. vegetables and fruit). See Chapter 1.
- g) Eat some fresh garlic and/or a piece of pawpaw leaf about 5cm square every day to avoid having worms or amoebal infections. This treatment is particularly helpful for those people who often complain about diarrhoea.

### 4.2 How to treat diarrhoea(s)

#### A. Replace lost liquid, energy and minerals with ORS (Oral Rehydration Solution)

With diarrhoea, the most important thing is to replace the loss of water. For both children and adults, therefore, always give enough ORS. And always make ORS yourselves. Do not use commercial packages, they are expensive. We are even not so happy about freely given packages from United Nations organisations, as that encourages dependency! Every parent should know how to make ORS!

## A.1 The ingredients

ORS has three components: water, sugar, salt. Water is essential for all bodily functions, sugar for energy and salt to replace the salt lost in diarrhoea.

Table 4.1 How to recognise and treat diarrhoea

Symptom	Possible cause	Treatment
No blood in stool No fever	Food poisoning,	Children: ORS, Adults: ORS / charcoal
	Viral diarrhoea,	Children: ORS, Adults: ORS / charcoal
	Cholera (severe diarrhoea in which the stool is like rice water)	ORS plus <i>anamed diarrhoea tea</i> (see B.3 below) plus artemisia tea like for malaria. If there is no immediate improvement even after one hour, see a hospital, use antibiotics and drink these teas also. No hospital? Use antibiotics. No antibiotics? <i>Try anamed diarrhea tea and A-3 tea.</i>
No blood in stool Fever	Malaria	Always ORS. Always lemon grass tea plus antimalarial treatment (see Chapter 5)
	Typhoid fever	ORS plus an antibiotic. And/or use ORS plus tea from <i>Azadirachta indica</i> , or <i>Artemisia annua</i> , or <i>Vernonia amygdalina</i> or <i>Melia azedarach</i> .
Blood in stool No fever	Amoebic dysentery	ORS and <i>Euphorbia hirta</i> tea. If diarrhoea continues: ORS and <i>anamed diarrhoea tea</i>
Blood in stool or urine No fever	Bilharzia	ORS plus <i>Artemisia annua</i> tea. Go also to a clinic to see if this treatment is sufficient.
Blood in stool and fever	Bacillary (bacterial) dysentery	ORS and <i>anamed diarrhoea tea</i> . (see B.3 below). If there is no improvement, go to hospital. No hospital? Use antibiotics, ORS and <i>anamed diarrhoea tea</i> . No antibiotics? Use ORS, and add <i>Vinca rosea</i> to the <i>anamed diarrhoea tea</i> until the diarrhoea stops. See B.6 below.

- WATER: Use good water, if no clean spring water is available, use boiled water. Or make tea out of guava leaves and use this instead of water.
- SUGAR: Ideally use honey, except with children under one year old, for whom honey is not recommended. If honey is not available, use household sugar (some hospitals use glucose). If you have no sugar, or the patient is diabetic, you can replace the 30g household sugar in recipe A2, by mixing one of the following thoroughly in 1 litre of water:
  - a) about 100g mashed sweet bananas (about half a handful, do not boil).

- b) about 100g sweet potato (about half a handful, boil for ten minutes).
- c) about 30g (three heaped teaspoonfuls) wheat flour, pounded rice or sorghum. Boil for five minutes.

- **SALT:** Ideally, use so-called "indigenous salt". This is made locally by taking the ashes obtained from burning trees, adding water, boiling the water off in clay pots (because metal pots would be destroyed) and collecting the resultant crystalline material. This is particularly good, because it also contains potassium. Otherwise use household salt (sodium chloride).
- **POTASSIUM** - an additional ingredient which should be added if household salt is used and if the diarrhoea persists for several days. Potassium helps the muscles of the intestine and bowels to function normally. Good sources of potassium include spinach, avocado, banana, pumpkin, coconut water, carrots, cooked soya, peanuts, moringa and steamed dark green leafy vegetables.

For small children who cannot eat much food, in case of emergency, add one teaspoon of fresh, clean ash (from non-toxic wood or grasses, or from dried water hyacinth, which is rich in potassium) to the one litre of water used to make ORS (see below). After some minutes, filter the water.

Note: Salts of potassium should only be added if the patient is able to urinate.

If any of your materials (water, sugar or salt) is not completely clean, bring the mixture briefly to boiling point to kill bacteria. Colorants and aromas serve no purpose at all!

## A.2 Production of ORS:

**In the household:** Either, to one litre of water, add 4 tablespoons of honey or 2 heaped tablespoons of sugar (30g), and half of a level teaspoon of salt. Or, to one big mug (500 ml) of water, add 2 tablespoons of honey or one heaped tablespoon of sugar, and a pinch of salt (the amount of fine salt you can hold between thumb and index finger).

**In the hospital:** To one litre of water add 20g glucose or 30g household sugar, 2.9g trisodium citrate dihydrate, 3.5g table salt (NaCl) and 1.5g potassium chloride.

## A.3 ORS: The dosage

Give per day: 200 ml (one glass) for every kg bodyweight of your child. If you don't know the weight of your child, and cannot measure ml, the following table will help: Cups are better measuring units than bottles, because bottles are difficult to clean properly.

Table 4.2 Daily dosages of ORS

Age	ml	Number of cups or bottles of size...			
		0.33 litres	0.5 litres	0.7 litres	1 litre
Under 6 months	700	2	1½	1	¾
6 months to 2 years	1400	4	3	2	1½
2 to 6 years	2100	6	4	3	2
7 years and older	2800	8	6	4	3
Adults	3500	10	7	5	3½

Sip slowly and steadily throughout the day. With babies you must continue breast feeding.

## B. Treatment with herbal teas or medicinal charcoal

### B.1 Simple diarrhoea: Guava (*Psidium guajava*)

Guava is a disinfectant, an antispasmodic and contains tannins (which are astringent). All these properties are useful in treating diarrhoea. To produce guava tea, take either one handful\* of fresh guava leaves or one tablespoon of pounded, dried guava leaves. Boil in 1 litre of water for 2 minutes. Leave to steep for about 30 minutes and then filter. Drink in portions in the course of the next 24 hours.

- Simple diarrhoea in adults. Just drink 1 litre of normal guava tea. This helps in 90% of cases.
- For persistent diarrhoea in children and adults, use “Guava-ORS” in the quantities given in Table 4.2. Prepare guava tea as described above, and add the sugar and salt as described in A2 above.
- This guava tea is also very helpful for gastritis. Take one mouthful every hour.

### B.2 Serious diarrhoea caused by amoeba and other infections: Asthma weed (*Euphorbia hirta*) :

Boil one handful of the whole fresh herb (cut the plant with scissors, leaving the roots in the ground so the plant can grow again) with one litre of water for about 2 minutes. (If you have a scale: Use 10 g of fresh herb or 2 g of dried herb). Allow to steep for about 30 minutes and then filter. Drink in portions throughout the day. Repeat this treatment for eight days. This is very effective, especially in the case of amoebic infections.



It is important to identify this plant accurately. It is widespread in the tropics. It grows 30 to 40 cm long, and has short dentate (toothed) leaves on short stalks. The stems are covered with tiny stiff intensely yellow coloured hairs. It looks similar to many other weeds, but has three distinct features:

- White sap oozes out of the stems when cut.
- The bunches of tiny flowers are green and occur on a short stem which comes out from the leaf axil (where the leaf is joined to the stem).
- The fruit contains dark red seeds, which are less than one millimetre long and three-edged.

### B.3 Life threatening diarrhoea, bacillary dysentery, cholera: “*anamed diarrhoea tea*”

*anamed diarrhoea tea* is extremely effective, and has saved countless lives. However, it should only be used if you have already used guava tea and found it ineffective. Wash and mix one handful\* each of asthma weed (*Euphorbia hirta* - the whole plant, but not the roots), guava leaves and young bright green mango leaves. Boil for 2 minutes in one litre of water, and leave to steep for 30 minutes. Filter. If either guava or mango is not available,

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\***Note: What is a handful?** Whenever we speak of a handful we mean the amount of leaves that the patient can hide in the fist.

use pawpaw leaves instead. However, the tea is then bitter, and children may refuse to drink it. Drink this quantity of tea slowly during the next 24 hours. Take for 8 days, **even if the symptoms have disappeared**. The continued treatment removes the amoebic cysts ("eggs") from the intestine. Often it also removes intestinal worms. In Bukavu, in the Congo, where very careful records have been kept, they have had a 99% success rate in treating over 200 patients suffering amoeba and dysentery with tea made from *Euphorbia hirta*, guava and mango.

Age	Daily dosage
1 to 3 years	1/4 litre daily
4 to 6 years	1/2 litre daily
7 to 12 years	3/4 litre daily
13 to adult	one litre daily

**Table 4.3 Dosage of *anamed* diarrhoea tea**

**Hint for patients:** If an infection by amiba is not life-threatening, better drink only *E.hirta* tea; the diarrhoea will continue 2 days more, but in total you will be quicker healthy, because the amiba will quicker leave your bowels by being excreted by the diarrhea.

**Hint for hospitals:** You may prefer to prepare this *anamed diarrhoea tea* from dried ingredients. Harvest these plants towards the end of the rainy season, dry them thoroughly and pulverise them. The dosage is then to boil one heaped tablespoonful in one litre of water for 2 minutes, and leave to steep for 30 minutes before filtering. If the dried leaf powder is stored in an airtight container, it will keep for 3 years. The "Flying Doctors" prepare several kilograms in this way, in readiness for epidemics of cholera etc.

#### **B.4 Other plants**

If the plants described in this chapter are not available, tea may also be made from the leaves of the neem tree (see Chapter 9), from *Artemisia annua* (see Chapter 8) or fresh green mango leaves alone (*Mangifera indica*).

The leaves of *Carica papaya* are also effective: Boil one handful of leaves in one litre of water for 1 minute, and then leave to steep for 20 minutes. Filter and drink in portions throughout the day. Children prefer guava tea because pawpaw leaf tea has a bitter taste. If nothing else is available, drink the water in which you cook rice.

#### **B.5 Medicinal charcoal**

Charcoal is used in cases of food poisoning, or for light diarrhoea. Take care with children, even charcoal must always be taken together with ORS. Make charcoal from the wood of a tree that is neither poisonous nor resinous. For example, use branches that grow towards the centre of a mango tree that never bear fruit, or use pounded peanut shells. Heat in a closed (iron!) saucepan until the wood or shells turn into charcoal. Be careful when you lift the lid, the powder may suddenly burn! Pound the charcoal, put it through a sieve, and reheat to ensure that it is absolutely sterile. Take one tablespoonful, three times daily in water. In between taking charcoal, drink a lot of water or ORS (see A.2 above).

#### **B.6 *Vinca rosea*.**

In life threatening cases, where even *anamed diarrhoea tea* is not effective, prepare *anamed diarrhoea tea* as described above. Then, immediately after removing the tea from the fire, add one handful of fresh leaves of *Vinca rosea* to the tea and allow it to steep for 30 minutes. Filter and drink in the course of the day. Be careful – *Vinca rosea* is toxic!

## Chapter 5. Malaria

### 5.1 Introduction

World-wide about 500 million people contract malaria each year. Between 1 and 2 million of those people die, many of whom are children under 5 years old.

Malaria is transmitted from one person to another by mosquitoes of the species *Anopheles*. When they take blood from an infected person they collect the malaria parasites (microbes, called plasmodium). Then, when they take blood from another person, they inject the plasmodium along with their saliva. The plasmodium finds its way into the liver, and from there into the red blood cells. The victim falls sick 7 to 10 days after being bitten.

Typically, a malaria patient experiences chills and sweats alternately. It may be, however, that another symptom is predominant, so that it is not immediately obvious that the patient has malaria. Malaria can be hidden behind a range of symptoms, e.g. diarrhoea and vomiting, cerebral problems such as convulsions and unconsciousness, anaemia or fever.

Healing plants can save many lives; a wonderful example comes from the D.R.Congo. In 1997 the Bishop of the Diocese of Bokungu-Ikela had to flee from the rebels and hide for four weeks in the forest, together with 20 others. They had no houses, no mosquito nets and no medicines - they were simply under the trees! When they had fever, they drank the teas listed below. The bishop said, "In spite of our fears, not one of us became dangerously ill with malaria."

### 5.2 How to prevent malaria

1. Reduce the number of mosquitoes in your home and immediate surroundings:
  - Have no open water in barrels or tanks - they all need lids or a mosquito grid.
  - There must be no stagnant water of any sort.
  - There must be no waste lying around - e.g. mosquitoes breed in old tyres and tins.
  - Protect your forest, because there live the natural enemies of mosquitoes.
  - Have no high plants (grass etc.) around the house, except aromatic plants such as *Cymbopogon citratus* (lemon grass), *Tagetes erecta*, *Tagetes minuta* or *Artemisia annua*. It is even advisable to have such herbs in pots inside the house.
2. Reduce the contact between mosquito and people:
  - Use mosquito nets, particularly when sleeping, and mosquito grids in the windows.
  - Add a trace of neem oil to the kerosene in lamps.
  - Put dried and powdered pyrethrum flowers in a corner of your room.
3. Reduce the number of parasites:
  - Treat ill people.
  - Prevent the parasites becoming resistant - use a range of treatments. (See Table 5)
4. Develop a good immunity:
  - When you have malaria - treat it effectively.
  - Eat plenty fruit and vegetables - which contain vitamin C.
  - Include plenty garlic in your diet, particularly raw garlic. See Chapter 6.
  - Avoid smoking and excess alcohol. .

**Table 5 Herbal remedies for malaria**

Plant name	Recommended up to a body temp. of (°C)	Part of plant	How used	Effect -iveness	Side effects
<i>Cymbopogon citratus</i> (lemon grass)	always	leaves	tea (see note 3)	+	none
<i>Allium sativum</i> (garlic) See Chap. 7	always	cloves	three heaped tablespoons of chopped garlic each day	++	+ stomach ache
<i>Zingiber officinale</i> (ginger)	37.5	roots	eat one handful fresh, or boil for 10 minutes. Do not filter, but drink and eat everything.	+	none
<i>Psidium guajava</i> (guava)	37.5	leaves	tea (decoction)	+	none
<i>Carica papaya</i> (pawpaw) See Chap. 10	38.0	leaves	tea (infusion)	++	+ possibility of vomiting, and of allergies developing
<i>Vernonia amygdalina</i> (bitter leaf)	38.0	leaves or root (see notes 4, 8)	leaves: infusion roots: decoction	++	+ as yet unknown; it contains cytotoxic substances
<i>Azadirachta indica</i> (neem) See Chap. 9	38.5	leaves (see note 8)	tea (infusion)	++	++ irritation of the liver
<i>Cinchona officinalis</i> (cinchona)	39.0	bark (see notes 5,8)	tea (decoction)	+++	+++ tinnitus (buzzing in the ear). Sometimes giddiness, nausea, vomiting. With high dosages, a risk of deafness, and bleeding in the inner ear.
<i>Artemisia annua</i> (A3) See Chap. 8	39.0	leaves (see note 8)	tea (infusion)	+++	none

### 5.3 Treatment with herbs

Use a range of herbs - and make it impossible for the malaria parasites to develop a resistance to any one treatment.

When we have an infection, the germs cause fever, especially when these germs die and begin to decompose. All substances that cause fever are called pyrogens. Drinking enables the body to get rid of pyrogens. Pyrogens are also excreted through the skin by sweating. Hot lemon grass tea in particular causes the body to sweat and urinate more, thereby cleansing the blood and body. Sweating is particularly effective in ridding the body of toxins. We recommend that an adult malaria patient drinks 2 litres of lemon grass tea each day in addition to one litre of one of the other herbal teas listed in Table 5. In fact we recommend that an adult with a high temperature drinks two litres of lemon grass tea each day, whatever the cause.

Each of these herbal treatments should be continued for 7 days. Sugar or honey may be added to all the teas. Malaria destroys the sugar in the body, and therefore it is helpful to replenish the sugar-level in the blood. In fact malaria patients should be given food because they often lose appetite and become under-nourished.

#### Notes on treatments

1. Adults should always drink in total about 3 litres a day. Children must also drink a lot, the amount depending on their body weight.
2. A tea can be either an infusion or a decoction.  
**Infusions:** Pour one litre of boiling water over one handful of fresh leaves, or 15g dried leaves (5g if *Artemisia annua* or *Azadirachta indica*). Leave to stand for at least 10 minutes, then pour through a sieve.  
**Decoctions:** Quantities as for infusions. Boil the water and the leaves together for about 20 minutes. Cool and sieve.
3. With lemon grass, boil the leaves for two minutes, leave to stand for at least ten minutes and then pour through a sieve.
4. *Vernonia amygdalina*. The leaves are very bitter. The bark of the roots is more effective. When using roots, use finger-thick, secondary roots, not the main root, so that the shrub does not die. Use a handful of bark from the roots and boil in 1 litre of water for 20 minutes. Filter and drink in four portions in the course of the day. Continue this treatment for 7 days.
5. *Cinchona officinalis*. Boil 10g or three heaped teaspoons of pulverised bark in one litre water for 10 minutes, filter and drink in portions over 24 hours. Children take less, depending on their body weight.
6. In the event that all these plants are ineffective, verify that it really is malaria from which the patient suffers. If yes, give 2 litres of lemon grass tea and one litre of Artemisia tea each day, and add a chemical treatment (i.e. amodiaquine or Fansidar).
7. Remember that no two patients are ever the same. Although two people may exhibit exactly the same symptoms, they may not respond to the same herb.
8. Pregnant women: Do not use *Azadirachta indica* or *Vernonia amygdalina*. You may use *Cinchona officinalis* or (as we believe) better use *Artemisia annua*. If a doctor is available, ask his medical support.

## Chapter 6. AIDS: Strengthen the immune system

To remain healthy, we should all take great care to make our immune system as strong as possible. This is particularly important for people who are HIV positive.

Pay attention to each of the following:

- a) Live positively, make good relationships with your neighbours and be close to God.
- b) Ensure that your diet is good and balanced. Eat a lot of fruit and vegetables. Drink fruit juices, plenty good water and herbal teas. Avoid sodas. See Chapter 1.
- c) Do not smoke, and if you drink alcohol, drink very little.
- d) Keep as fit as possible; walk, cycle or work in the garden every day.

The following plants and natural products all help to strengthen the immune system. They are good for us all. If you are HIV positive, use two or three of the following regularly.

anamed partners in many countries report remarkable successes with the daily use of moringa leaf powder and artemisia tea – whether or not AIDS patients take commercially available ARV drugs (anti-retroviral drugs).

### 1. *Allium sativum* (garlic)

Include as much raw garlic as possible in your daily diet. You can cut it into small pieces and mix it into your food immediately before eating.

Garlic has antiseptic, antibiotic, antiviral, anti-fungal, and anti-diabetic properties. Of particular relevance to AIDS is the fact that garlic has been shown to inhibit herpes simplex 1, a virus which stimulates HIV replication. Those people who experience some gastric irritation as a result of eating large quantities of garlic are advised to consume a small amount of oil, e.g. sunflower oil or butter which coats the stomach lining and disperses the irritant compounds. In China, garlic is in fact used to treat gastric ulcers.

### 2. *Aloe vera*

Aloe contains acemannan, a compound that neutralises the HIV by transforming its protein envelope such that it cannot attach itself to T lymphocytes, which are an important part of the body's defence system. Cut an old, large leaf of aloe as described in Chapter 2, and scoop the gel with a spoon. Take one to two tablespoonfuls of aloe gel every day, preferably on an empty stomach.

### 3. *Artemisia annua*

anamed co-workers with HIV have taken artemisia as follows:

- a) In the acute phase, pour one litre of boiling water over 5 grams (i.e. 4 heaped teaspoonfuls) of dried artemisia leaves, leave to stand for at least 15 minutes, filter and drink this tea in four portions during the day, (depending on the severity of the disease this may be for a week or even for a period of months).
- b) In the chronic phase, pour 250ml of boiling water over 1.25 grams (i.e. 1 heaped teaspoon) of dried artemisia leaves, leave to stand for at least 15 minutes, filter and drink this tea after breakfast. Continue like this for weeks or even years.

If you are lucky enough to have fresh artemisia plants in your garden, you can simply use 25 g (acute phase) or 6,25 g (chronic phase) of fresh leaves every day.

c.) If you like, you may eat the A-3 powder instead of drinking a tea, see chapter 8.

#### 4. *Azadirachta indica* (neem)

The Permaculture Project in Malawi and Kuluva Hospital in Uganda both produce powder out of dried neem leaves and give one to two teaspoonfuls each week to AIDS patients.

#### 5. *Citrus limon* (lemon)

Lemons have a high vitamin C content. Drink the juice of one lemon every day, either in warm water (not hot, so as not to destroy the vitamin C) or squeezed onto your food.

#### 6. *Cymbopogon citratus* (lemon grass)

Lemon grass tea: Boil one handful of fresh leaves for two minutes in one litre of water, leave to steep for 15 minutes and then pour through a sieve. Drink two litres in portions during the day. At the Moretele Sunrise Hospice in South Africa, Mpho Sebanyoni and her colleagues have found that AIDS patients who drink this tea regularly develop an appetite, put on weight and become stronger.

#### 7. Nutrition: moringa or grain amaranth

The leaves of both *M. oleifera* and *M. stenopetala* contain large amounts of vitamins, minerals and proteins, including many essential amino acids. For this reason, eat moringa every day, either fresh prepared as a vegetable or as leaf powder (See Chapter 11) mixed into the usual food. Moringa is used very successfully to bring malnourished children back to health. It is also very helpful for pregnant women and breast-feeding mothers. Taking moringa leaf powder not only builds up the body again, but often eliminates secondary problems such as diarrhoea and skin diseases. Add one heaped teaspoonful of moringa leaf powder to the food three times a day. AIDS patients should do this every day of their lives.

Grain amaranth is a vegetable that produces seeds and leaves with similar excellent nutritional properties to moringa. The seeds may be pounded to make flour and eaten as porridge with millet or maize meal, or used in baking in bread, cakes and biscuits.

#### 8. Natural bee products

**Honey:** *anamed* Bukavu in the D. R. Congo administers artemisia tea and a honey-aloe mixture for 20 days each month, and garlic every day. Mix one tablespoon of fresh aloe gel with two tablespoons of honey. Three times a day chop three cloves of garlic and swallow with a little water. Artemisia tea is taken as for malaria.

**Propolis** is a natural disinfectant produced by bees in their beehives, and has been shown to have antibiotic, anti-fungal, antiseptic and antiviral properties. Mix 10g of propolis with 100ml of pure medicinal alcohol (98%) for internal use, and shake once a day for 30 days. Filter. Dosage: Take 20 drops one to three times daily.

*For much more information, see the anamed publication "AIDS and Natural Medicine".*



Leaf, seeds and pods of *Moringa oleifera*. Moringa leaf powder may also be drunk as tea.

## Section III: Uses of some important plants of the Tropics

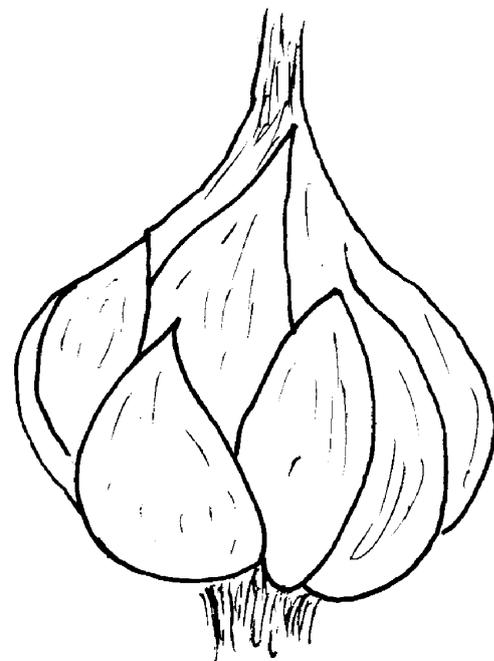
### Chapter 7. *Allium sativum* (garlic)

#### 7.1 Botanical description. Family: Liliaceae

Garlic is a hardy perennial. It grows to a height of 30 to 90 cm, and the bulb develops between 5 and 15 bulblets or cloves. It is native to Europe and North Africa, but new varieties can be grown in the Tropics.

#### 7.2 Cultivation

Garlic likes fertile, well-drained soil. Separate the cloves carefully from a garlic bulb, and plant in a shady place about 5 cm deep, 15 cm apart in rows 30 cm apart. If the plant starts to flower, cut the flower off so that the strength of the plant goes into the bulb. Harvest when the leaves turn brown and start to wither. Allow the bulbs to dry in the shade where there is a good current of air, and then carefully rub off the earth and outer leaves (if that is done wet, the cloves will be damaged). Store in an earthenware pot.



#### 7.3 Garlic's healing power

It has been said that garlic is the best example of the philosophy that your medicine should be your food, and your food your medicine.

There is a story of the medical powers of garlic from the early 1700s. Four thieves had found a way of protecting themselves against the plague and were making a good living robbing the corpses of plague victims. When they were eventually caught, the thieves saved their lives by revealing their secret - drinking vast quantities of vinegar infused with garlic.

Researchers believe that allicin is the source of most (but not all) of garlic's healing properties - as well as being the source of its odour. It is produced from the reaction of alliin with the enzyme alliinase, which occurs when garlic is crushed, sliced or minced.

Claims are made that garlic can be used to treat a vast range of problems, including whooping cough, respiratory and urinary tract infections, digestive disorders and infestations, skin problems, epidemics and fever. In the First World War it was used to prevent gangrene and sepsis. In China it has been used for diarrhoea, dysentery, tuberculosis, diphtheria, hepatitis, ringworm, typhoid and trachoma. In the West it has been used to treat chronic bronchitis.

#### 7.4 Constituents

**Allicin:** When garlic is crushed, the enzyme alliinase acts on the chemical alliin and converts it into allicin. Allicin is a powerful antibacterial and anti-fungal compound. Allicin also fights arteriosclerosis (hardening of the arteries).

**Ajoene:** As well as having antibacterial and antifungal properties, ajoene has anti-clotting properties which help to reduce the likelihood of heart attacks and strokes.

**Flavonoids** are anti-oxidants and reduce the risk of cancer, heart disease and some neurological diseases.

## 7.5 Building up the immune system

Regular consumption of garlic has been shown to reduce the incidence of:

- heart attacks
- strokes
- cancer
- high blood pressure
- influenza

It does this by:

- reducing cholesterol levels in the blood.
- breaking down fibrin, one of the components of blood clots.
- fighting microbes, fungi and viruses. In some cases, antibiotics may be more powerful, but often garlic has a broader range of activity and penetrates more easily into infected areas. Garlic also has fewer side-effects.

During an epidemic of meningitis in a certain region of Ethiopia, local people were encouraged to eat raw garlic. Of those who did, none died, but many of the others died. The smell of garlic on the breath can be reduced by taking ginger in any form.

## 7.6 Preparation of garlic treatments

- ◆ Eat **raw garlic** - this is the best!
- ◆ Use **in cooking**.
- ◆ **Garlic honey**. Fill a glass jar with peeled and chopped garlic cloves. Slowly pour in honey so that it fills all the gaps between the cloves. Place the jar in a warm place of about 20°C. In two to four weeks, the honey will absorb the garlic juice, and the garlic will become limp and opaque. Do not filter. Use within 3 months.
- ◆ **Garlic-sugar mixture**. Pound one teaspoonful of garlic cloves. Mix with the same amount of sugar or honey. Use immediately.
- ◆ **Garlic oil**. Take one part of peeled and crushed garlic and mix with two parts of vegetable oil. Mix thoroughly. If you have no reliable refrigerator, use it within one day. If you do have a good refrigerator, use within one week. We no longer recommend keeping garlic oil for one month because of the danger that bacteria may produce the botulism toxin. Botulism intoxication causes paralysis.
- ◆ **Garlic tincture**. Soak 200g peeled and chopped garlic cloves in one litre of brandy or other 40% alcohol for 14 days at about 20°C in a bottle with an air-tight seal. Shake the bottle several times a day. Strain out the pieces of garlic. The tincture keeps for about a year.

## 7.7 Ailments for which garlic is useful

### A. Coughs, colds and sore throats

1. Eat a clove of garlic three times a day.
2. Take a teaspoonful of garlic honey every few hours.

3. Take a teaspoonful of garlic-sugar mixture every few hours.
  4. Take a teaspoon of garlic oil 6 times a day.
- B. Chronic sinus infections, headaches and migraine**  
From time to time, place a drop of garlic oil in each nostril. Alternatively cut off the tips of two garlic cloves and put one in each nostril. Caution: it is essential to leave the skin on the garlic clove, or the garlic will burn the sensitive skin (mucous membrane) inside the nose.
- C. Sprains, aches, fungal infections, minor skin disorders, scabies**  
Rub garlic oil directly onto the affected area. See Chapter 3.
- D. Diabetes**  
Eat fresh garlic regularly - garlic and onion reduce blood sugar and high blood pressure.
- E. High blood pressure**  
Eat raw garlic, or take between 5 and 25 drops of garlic tincture several times a day as needed.
- F. Light cases of malaria**  
Chop garlic finely. Swallow one full tablespoon of this chopped garlic three times a day, and drink 2 litres of lemon grass tea a day. Continue the treatment for 5 days. If necessary, add another antimalarial treatment.
- G. AIDS**  
Include as much garlic as possible in the daily diet to strengthen the immune system. Garlic is being used increasingly in supportive treatment for both malaria and AIDS.
- H. Insect bites**  
Insects are not sterile! An infection may well follow a bite or a sting. Rub with fresh garlic, or secure a slice of garlic to the bite with a plaster. This helps also in cases of allergic reactions.
- I. Toothache**  
At the first sign of toothache (due to pus under the tooth) cut a slice of garlic and put it on the affected spot. Place it between the cheek and tooth, in a way that the cut surface is toward the tooth, the uncut surface is towards your cheek. Replace every day and continue like this for several days during daytime (if you are married) or overnight (if you are a single). The pain on the gum will diminish after a few minutes. Garlic kills the bacteria which causes the tooth decay because it is able to penetrate the gum. Eat a lot of garlic as well.
- J. Closed abscesses. Pus under the skin (including blind boils, closed wounds, infections of the skin surrounding the finger or toe nails etc.)**  
Use pounded garlic or garlic oil, see Chapter 2. Garlic has the property of attacking infection through the skin. Take care, however, because pure garlic is very strong and can burn the skin, leaving it permanently discoloured.

## Chapter 8. *Artemisia annua* anamed "A-3" (sweet Annie)

### 8.1 Botanical description. Family: Asteraceae

*Artemisia annua* anamed (A-3) is an annual that can grow to a height of 3 metres. A-3 is a special breed of *Artemisia annua* which, compared with wild forms, has many advantages;

- it grows higher,
- it has many more leaves,
- it grows for much longer before flowering and dying,
- it has a higher content of medicinally useful compounds and,
- most importantly, it will grow in the Tropics.

### 8.2 Cultivation

#### Keep the seeds dry.

Use a small part of them now, and the rest at monthly intervals. Provided they are kept absolutely dry, the seeds keep well, the rate of germinate reduces by only 10% per year. The seeds, and the seedlings they produce, are extremely small and delicate. They need lots of care! Don't attempt to grow A-3 unless you, or your gardener, are prepared to devote a lot of time to the process, including weekends.

#### Prepare the seedbed.

It is helpful to construct a portable seedbed, e.g. from a flat wooden board with a 6cm high rim, or simply use the plastic lids of buckets. For 500 seeds you need one seedbed of 50cm x 50cm or several smaller seed-trays. Never forget to make enough holes in the bottom, so that excess water can always drain away, and so that you can water it from underneath.

Put a 3 cm layer of good soil in the bottom of the tray, and cover it with a further 3 cm of sand. This sand should be boiled shortly to kill any weed seeds that may be present. The seeds themselves contain the nutrients that they require during the early stages of growth.

Ensure that the seedbed is very moist, but not waterlogged. The seeds should be evenly distributed over the surface - a kitchen sieve can help in this process. Do not cover the seeds.

#### Artemisia seeds require light and moisture to germinate and grow.

Place the seedbed on the veranda to protect it from the rain. Place it in direct sunlight. The ideal temperature for germination is between 20 and 30°C, but germination has been successful at temperatures as low as 10°C and as high as 40°C. If there is any danger from birds, mice or hens, cover the seedbed with a mosquito grid.

To ensure that the earth is always moist, regularly put your seedbed into a larger tray filled with a little water for 10 minutes, so that the water soaks up from underneath.

The first green leaves appear after 3 to 7 days. *Artemisia annua* is a dicotyledon, that means that when it germinates, two leaves appear. It can thus be distinguished from grass seedlings that produce only one leaf. Eight days after sowing, seedlings which grow too close together should be thinned out using tweezers, and replanted elsewhere on the seed-tray.

## Potting the seedlings

Around two weeks after sowing, transplant into small pots. You can use plant pots, small plastic bags or pots made from banana leaves. This earth needs to be rich in nutrients; a mixture of equal parts of well-rotted compost (or black earth) and sand is ideal.

## Planting out in the field

When the plants are around 10 cm high, about 8 weeks after sowing, prepare your field.

Artemisia grows well in different types of climates and soils. It grows best in neutral or slightly alkaline soil, but will tolerate slightly acid soils.

The ideal crop to grow before artemisia is potatoes or sweet potatoes, because potatoes are particularly good at aerating the soil. Artemisia is a "rubbish-dump plant", that means it grows best in well-aired ground that is rich in nitrogen, such as soil from the compost heap. Therefore make the earth loose. If the ground is very hard and compact with a lot of clay, first dig a hole that is very much larger than you need, say 70cm x 70cm x 70cm, and into it throw a lot of sticks and leaves (but not from acidic plants such as conifers or eucalyptus) and into the soil mix well rotted manure that contains cow dung or chicken dung.

If you plant the artemisia seedlings 60cm apart, you can have 30.000 plants to the hectare. If space permits, however, plant at intervals of 1 metre. In between the artemisia plants you may grow beans or groundnuts, which fertilise the soil, or alternate rows of artemisia with rows of pawpaw, maize or sorghum. In fertile ground, the artemisia plants may grow to be 1 metre wide and 3 metres high!

Rather than having one large field, plant the artemisia in a variety of locations, in the sun, in the shade, on a hillside, on the level, in order to discover for yourself the most ideal site.

The hotter the climate, the more important it is that the soil is always moist. If the temperature is always over 30°C and constant watering is not possible, create some shade. This can be done by building a frame out of bamboo, on which you can grow such nutritious plants as runner beans, kiwis, passion flowers and pumpkins, or by alternating rows of A-3 with rows of pawpaw or maize.

If you live in a very dry region, plant the seedlings in rows about 5 cm below the general ground level. If you live in an area where sometimes the ground is waterlogged for days at a time, plant the seedlings in rows a little higher than the general ground level.

Use the hoe and water regularly. The ground must be kept moist, particularly during the first two weeks after planting. The plant reacts to stress, particularly to being too dry, by flowering prematurely. When the plants are 50cm high, you can fertilise them once a



month. We recommend natural manure, such as well-composted animal dung. Only when you have no alternative should you use a synthetic fertiliser. In this case, try an N-P-K fertilizer.

### **Propagation of *Artemisia annua***

A-3 is a special breed that mixes itself easily with wild forms. Therefore the seeds should not be used, as their quality declines with each generation. Some will germinate, but the resultant plants will be weak, very mixed in appearance, and have 30% less content of the medicinal compounds. This may be too little to treat malaria. *Artemisia* must be propagated, therefore, by taking cuttings! Two to four months after sowing, select your three strongest, healthiest plants. Cut the branches into several pieces, each 2 to 3 cm long, ideally with a razor blade. In this way, from just one plant, you can create 1000 cuttings, enough to treat 5000 patients and more! Take cuttings every month. Never use plants that have flowers, or even buds, otherwise your cuttings will immediately start to flower!

Remove all the big leaves from these cuttings. Prepare the earth and plant them one centimetre deep in your seed tray, prepared as described above but containing earth that is a mixture of sand and well-rotted compost. Each cutting must have at least two nodes. The lower cut must be just below a node – otherwise the stem may rot in the ground. Remove

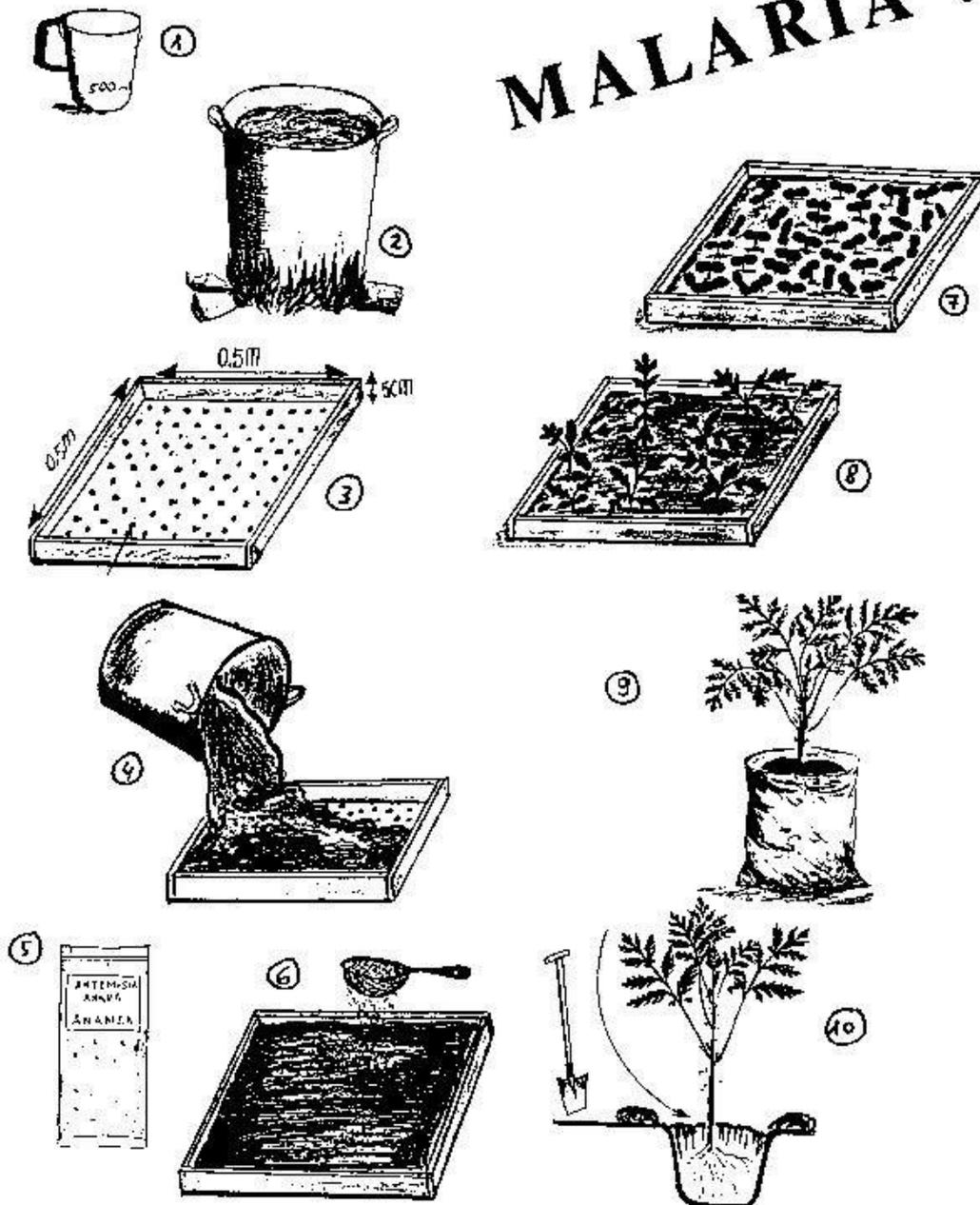


all leaves from the lower node, and from the upper node remove only the large leaf, and leave the small side shoot intact. Stick these cuttings into the earth so that roots can grow from the lower node, and so that the stem is at an angle of about 30° to the vertical. If the air is very dry, cover the cuttings with plastic in which you have made some holes, but if the atmosphere is very humid leave them open. The cuttings should be in a bright place, but out of direct sunlight. The best idea is to have two different beds which you treat slightly differently, in order to learn the ideal conditions in your area.

Whilst some people have no problem with this method of propagating from cuttings, others find great difficulty. If so, place your cuttings, prepared as described above, in water which contains a few drops of synthetic or natural fertiliser. Natural liquid fertiliser can be prepared by adding water to goat droppings and allowing it to stand for about 6 weeks. The roots appear after around 3 weeks.

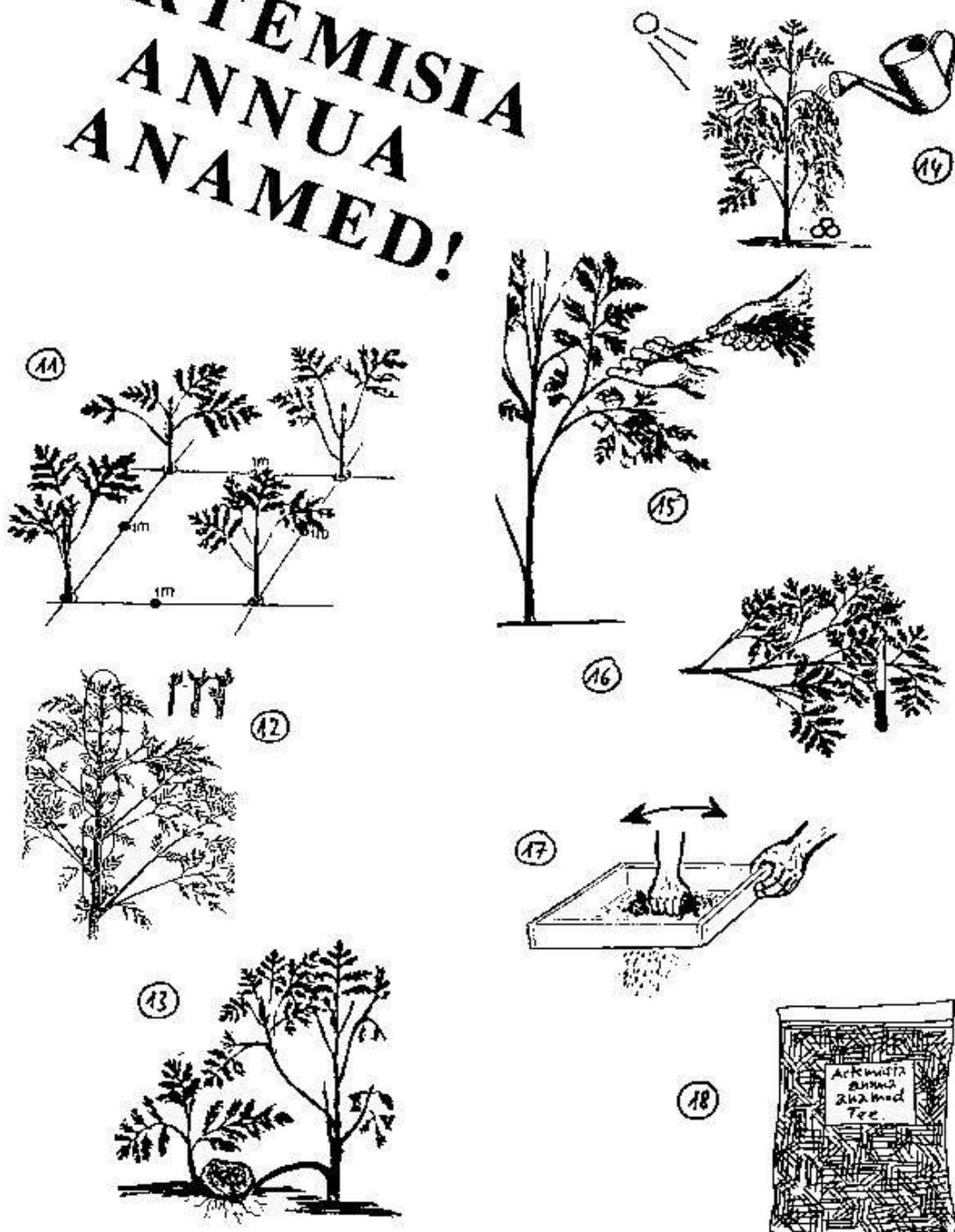
From the plants that develop you can take further cuttings, and from the new plants again further cuttings! You can take cuttings in this way year after year, without any loss in artemisinin content.

# MALARIA ?



1. Mix 10 cups each of good compost or black earth, sand and water.
2. Only if there are weed seeds, you may bring this mixture to the boil.
3. Make a portable seedbed out of wood, and put small holes in the base.
4. Put this mixture into the seedbed.
5. Open the bag of seeds – note how very small they are.
6. Spread the seeds evenly. Do not cover them, and put the seedbed in a bright place.  
Before the earth becomes dry, place the seedbed in water.
7. The seeds germinate in 3 to 7 days. They need plenty sun.
8. Thin the plants out.
9. One to three weeks after sowing, give each plant its own paper or plastic pot.
10. Once the plant is around 10cm high, plant it out in the garden or field.

# ARTEMISIA ANNUA ANAMED!



11. Space the plants 1 metre apart.
12. From the best plants, take cuttings.
13. Or propagate the plant by the "stone-method"
14. The plants need a lot of sunshine, a lot of water and a lot of compost.
15. As soon as the first flowers appear, harvest the whole plant. Strip the leaves from the tip of the branches to the base.
16. Remove all the stems, cut the leaves into small pieces, and dry within 3 days.
17. Rub the dried leaves through a sieve and give the remaining stems to your animals.
18. Artemisia tea, in a labeled and sealed bag, ready for use. Keep in a dry place.

Illustrations: Bindanda Tsohi, Kinshasa Information and Copyright: [www.anamed.net](http://www.anamed.net)

An alternative approach is the “stone –method”. When the plant is at least 50cm high, you bend the lower outside branches over and bury the middle of them with soil. A stone may be needed to keep it in place. As soon as the buried portion of the branch has produced some roots, cut it from the mother-plant and plant it in the field. As always, use the healthiest plants, and only plants that have no flowers or even buds.

### **Possible plant diseases and enemies**

When artemisia is planted out in the open, disease is hardly known. In the greenhouse, disease is more likely. If it is too warm, the plant may attract aphids, if it is too cold, fungal diseases may occur. Treat aphids biologically, e.g. with pyrethrum powder (e.g. Spruzit - artemisia tolerates powder better than solution) or home-made insecticide from the neem tree (see Chapter 9). Very occasionally, young artemisia seedlings have been attacked by grasshoppers, ants or birds. In this case protect them with mosquito nets or gauze.

Termites sometimes build their nest around the stem of the artemisia plant. If this becomes too much of a problem, fill a bucket of water with the leaves and stems of a protein containing plant, e.g. tephrosia, tithonia or leucaena, leave to stand for a week and pour it around the stem.

### **A possible programme in southern countries**

Whatever the time of year, sow a few of the original A-3 seeds. If you live in the mountains, grow artemisia throughout the year. If you live in a hot, lowland area, grow artemisia in the shade, e.g. alternate rows of artemisia with rows of maize. If you have a possibility to water your plants in the field, then the ideal timing is to sow artemisia in the middle of the rainy season, and plant it out at the beginning of the dry and usual cooler season.

### **8.3 Transformation into a medicine**

Harvest all the leaves when the first flower buds show. The artemisinin content is highest just before the plant flowers. The refuse from harvesting can be composted or fed to your animals. In Tanzania, women bind the roots with a string and use it as a broom!

#### **Harvesting**

With one hand, firmly hold the end of the branch, with the other, strip the leaves from top to bottom. You may like to wear gloves. Remove all the stems from your harvest. You may use these fresh leaves immediately to treat malaria. Otherwise dry them.

#### **Drying**

Lay the leaves on a board and, with a sharp knife, cut them into small pieces about 1cm long (like in Africa we cut vegetable leaves, and in Europe chives). Dry them as carefully as possible within three days at a temperature under 40°C. If the air is humid, dry in the sun, if dry, then in the shade. In any case, the leaves should be dried within three days. While they are drying remove any remaining stems by rubbing the leaves through a sieve with holes the size of those in a metal window mosquito grid. You could make a home-made sieve yourself from such a grid.

Dry the leaves until a hygrometer, put into a glass container or a plastic bag together with the leaves, records a humidity of no more than 40% .

It is very difficult to estimate the yield of a new crop grown in a new location. In optimal conditions, each plant produces about 400g of dried leaves. That means that one plant can be used to treat about 11 patients (35g each).

**Storage:** Keep in the dark in an air-tight container such as a plastic or metal barrel. Put a hygrometer in the container. If the hygrometer shows the air humidity to be minimum 40%, the leaves, kept airtight, will keep for 3 years.

**Quality:** The leaves make tea of good quality if they contain no stems or flowers, the colour is dark green and not grey or brown, and they are well-dried.

**Packing:** Pack in air-tight bags of 50g weight for the transport. On the label indicate the expiry date, which is two years following packaging. Please write on the label: "This tea must be kept in an airtight glass container with a metal lid. Only if kept dry in this way, the tea can be used until the expiry date that is mentioned on this label".

**Pricing:** In most countries we count the average price of a beer bottle for one cure of artemisia (50g).

**Inform the authorities!** If artemisia is not already being grown in your country, try to get formal permission to grow it. Inform the Ministry of Agriculture that artemisia is already grown by *anamed* partners in 70 different countries. If necessary, ask your Bishop to speak with the Ministry on your behalf.

#### **8.4 Treatment of malaria with *Artemisia annua* *anamed* "A-3"**

Again, we recommend that you contact the relevant authorities. You have no reason to be anxious, because you are following very clearly the guidelines of the World Health Organisation (WHO). Back in 1987 the WHO stated: "*Member states should:*

- a) *involve traditional healers in community based health care.*
- b) *support research into traditionally used healing plants.*
- c) *develop an exchange with other countries in the field of traditional medicine."*

Visit the representatives of the WHO and the Ministry of Health in your country; show them our documents and your plants. You will certainly be congratulated!

**A word of encouragement - and caution:** *Anamed* can save more lives with artemisia than with any other plant! Tea made out of the leaves of *Artemisia annua* has been used in China for over 2000 years to treat fever. In January 2006 the Swiss pharmaceutical company Novartis announced that it intended to produce 100 million treatment courses of its anti-malarial *Coartem* (artemether/lumefantrine) in 2006 (up from 30 million in 2005). They claim that this drug has a cure rate of 95%. We can quote the record of three different clinics in the Congo. 161 African volunteers were treated using artemisia tea; after 7 days 91% were free from malaria pathogens.

Even so, it is important to emphasise that every therapy, whether chemical or biological, has a limited success rate. It would be wrong to put one's complete faith in any one given remedy, whether tablets or plants.

The particular achievement of *anamed* was to confirm that tea made from the special breed, A-3, is also very effective in the treatment of malaria. Artemisia tea is in fact itself a "combination therapy" because it contains at least 10 anti-malarial components. The dosages we use are based on those given in the IX Chinese Book of Drugs, information in Hagers handbook and on our own analyses made in several universities.

### Preparation of A-3 tea

For adults of 60 to 70 kg, pour one litre of boiling water over 5g of dried leaves of A-3 (or 25g of fresh leaves), leave to cool for 15 minutes and then filter. Divide the tea into 4 equal amounts, and drink at six hourly intervals (it is better to prepare the tea freshly each time). You need a good scale - or 5g is the amount that just fits into a 30 ml container, formerly used as film container – or four heaped teaspoonfuls.

Table 8.1 Daily dosages of artemisia tea

Weight of patient (kg)	Age	Artemisia tea taken orally. ..g leaves in ..ml of water per day for 7 days
5-6	2-3 months	0.5g/100ml
7-10	4-11 months	1g/200ml
11-14	1-2 years	1.5g/300ml
15-18	3-4	2g/400ml
19-29	5-9	3g/600ml
30-39	10-11	3.5g/700ml
40-49	12-13	4g/800ml
50+	adults	5g/1000ml

Caution: Do not make artemisia tea in an iron pot, as artemisinin reacts with iron!

### Enema instead of injection

In many tropical countries, mothers ask for an injection for their children, as they consider it as “a special treatment”. However, injection should not be considered as a favor but should only be used when the patient cannot drink tea or take tablets because he is **unconscious**. Moreover, injections are expensive, often not available and sometimes contaminated. In this case, we recommend giving an enema.

How to give an enema based on artemisia: use three times more artemisia leaves (because the active substances are less absorbed by an anal application than by an oral application) and half of the water quantity (as less water can be given in an anal application).

On the first day, give the daily dosis in one enema, then for the following days, divide the daily dosis into 4 doses (4 enema) during the day, so every 6 hours. For example, for an adult: Pour 500 ml of boiling water over 15 g of dried or 75 g of fresh artemisia leaves, wait for at least 15 minutes, filter and allow to cool. Every 6 hours take  $\frac{1}{4}$  of the artemisia tea (125 ml), and give as enema to the patient. In case of emergency, dissolve tablets of paracetamol (same dosis as by oral application), it will reduce the fever and could eventually bring the patient out of its unconciousness, which make it possible to continue the treatment with artemisia through oral application. In case of need, you may dissolve quinine tablets (same dosis as by oral application) in this artemisia-enema or separately. Repeat this enema for seven days. As soon the patient can drink again, give all medicine by mouth. It is important to respect the dosis presented below according to the weight/age of the patient.

Enemas: Lay the patient on the belly, place a cushion underneath so that the anus is uppermost. Give the enema in the concentrations given below. In the absence of the proper equipment you can use a disposable syringe without the needle. Supervise the patient closely for one hour afterwards to ensure that the liquid is not expelled – if it is, give the same dosage again.

## 8.5 Treatment of malaria with A-3 tea, in detail

### Notes

- A. We make these recommendations based on our own experience and a lot of academic research. The WHO promotes "traditional medicine", but not the use of artemisia tea! Please therefore try to convince your health authority before using these treatments.
- B. These recommendations are not written for tourists, but for local people and expatriates living in malaria-endemic regions.
- C. As a patient, do not hesitate to seek medical advice at any time! As a doctor, do not hesitate to use reliable, locally available medicines! As a health-minister, recommend these recipes to your country!
- D. Please do not reprint these recommendations without consulting us as we are constantly improving our recommendations according to feedback from our partners.
- E. Whenever we speak of "artemisia", we mean leaves made out of original "*Artemisia annua anamed*" plants. Such leaves have a high medicinal content. They must be fresh leaves, or leaves that have been properly dried and stored in an air-tight container.
- F. For most adults, treatment with artemisia tea alone will be enough. Sometimes, however, additional treatment will be necessary, either in the case of recrudescence, i.e. a repeat attack of malaria within 4 weeks, or if the patient shows no improvement within 24 hours from the time the treatment with artemisia tea commenced. In this latter case, of course, it is always possible that the problem is not malaria.
- G. Weighing artemisia tea: Dry artemisia leaves within 3 days at a temperature of not higher than 45°C, and sieve through a mosquito grid. Weigh this broken leaves on a scale. If you have no scale, one 30ml film container filled with dried artemisia leaves (without pressing) corresponds to 5 grams. If you grind the leaves to a fine powder and you fill the same film container with it, it gives you 10 g of artemisia!  
It is not difficult to make your own scale: Hang 2 plastic cups right and left from a piece of wood, as described in our book "Natural Medicine in the Tropics: IV Teachers' Resource Kit", order number 113. In the left cup, put 5 sheets of ordinary A4 photocopy paper (which weighs 80 g per square meter, i.e. 5g per sheet), in the right cup put fresh artemisia leaves. If the scale is balanced, you have 25 grams of artemisia!
- H. Preparation of "*anamed* artemisia tea": Pour one litre of boiling water over 5 g of dried or 25 g of fresh artemisia leaves, leave to draw for at least 15 minutes and filter. Prepare fresh tea every day – tea must always be used within 24 hours.
- I. If you don't like the bitter taste of the tea: Powder the dried leaves, every morning and evening mix the needed quantity of artemisia powder with some yoghurt, or peanut butter, or tomato juice, or mashed bananas etc and swallow it. Then drink some good water.

- J. Sugar in the tea: Normally we advise against putting sugar in teas, because sugar causes dental caries and contributes to other diseases. In the case of malaria, however, the malaria germs destroy the sugar in the blood. Therefore, for children up to the age of one year, you may add sugar to the artemisia tea. For older children, add honey or sugar. But only add the sugar or honey immediately before the tea is drunk, otherwise, during the day, any microbes in the tea may multiply.
- K. Honey: Honey is much healthier than sugar. Do not, however, give honey to babies of less than 12 months. For children older than one year, you may mix dried artemisia leaves directly with honey. Make this preparation fresh every day!
- L. Preparation of "*anamed* artemisia sugar": As this medicine will be used for babies, you need to have an extremely clean product.  
Wash your hands before harvesting, and take leaves from the upper, cleaner part of the plant. Wash the leaves carefully. Cut and dry them on a clean table. Pound them to a fine powder using clean instruments. (If available, use an electric coffee grinder).  
Heat sugar in a saucepan to be sure that all microbes have died and the sugar is quite dry. As soon as the sugar is cold again, mix 10 g of the artemisia powder with 90 g of sugar. If you have no scale, this corresponds to mixing one film container (30ml) of fine powder of artemisia with three film containers of sugar. One level teaspoon of this preparation weighs 3 g of mixture corresponding to 0.3 g of dried artemisia.  
Expiry date: After one year – if kept in an air-tight container.
- M. Enema: Supervise the patient to ensure that the enema is not expelled. If it leaves the anus within 30 minutes, give the same amount of enema again.
- N. In most countries, chloroquine has been replaced by amodiaquine.
- O. *Artemisia afra* grows in the region between Ethiopia and South Africa. Recent studies have shown that, although it contains no artemisinin, it is sometimes successfully used in treating malaria.

## Treatment of malaria with *Artemisia annua* in detail

### 1. Pregnant women in the first Trimester:

If a doctor is available, you may use *anamed* artemisia tea under his supervision. If not, it is up to you to choose this tea or to take quinine tablets (20 mg per kg bodyweight per day for 7 days). Also drink 2 litres of lemon grass tea every day.

### 2. Pregnant women in the second or third Trimester:

If there is a doctor, ask his advice. You may use "*anamed* artemisia tea" (see note H above): Drink one litre each day for at least 7 days. Also drink 2 litres of lemon grass tea every day. If necessary, you may add quinine tablets (20 mg quinine base per kg bodyweight per day for 7 days).

### 3. Breast feeding mothers

You may use "*anamed* artemisia tea" (see note H above): Drink one litre each day for at least 7 days. Also drink 2 litres of lemon grass tea every day. If necessary, you may add quinine tablets (20 mg per kg bodyweight per day for 7 days), or three tablets of sulfa-pyri\*.

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\* sulfa-pyri is short for sulfadoxin - pyrimethamine, trade name Fansidar.

If the patient is unable to drink, try the following: Pour 500 ml of water over 15 g of dried or 75 g of fresh leaves, wait for at least 15 minutes, filter, and give as an enema (in 4 or more portions). In case of need, you may dissolve quinine tablets or syrup in this artemisia-enema: Dissolve 20 mg of quinine base per kg of bodyweight in the 500ml of enema liquid. Give this enema for seven days, or until the patient can drink again, when the medicine should be given as tea.

#### **4. Children 2-3 months old (or bodyweight up to 6 kg)**

Give a quarter of a sulfa-pyri\* tablet once, or a total dose of 150 mg chloroquine base divided over 3 days, or a total dose of 150 mg amodiaquine base divided over 3 days. Give the child plenty to drink (boiled water, breast milk...). If these drugs are either not available or not effective, then use artemisia. If the baby is willing to drink the tea, administer 25 ml of "*anamed* artemisia tea" (see note H above), 4 times daily, i.e. in total 100 ml per day, for at least 7 days. Most probably, the baby will more readily take "*anamed* artemisia sugar" (see note L above): Give half a level teaspoonful 4 times daily, i.e. a daily total of 2 teaspoonfuls. If the baby is unconscious, try the following: Take quinine syrup, or dissolve quinine tablets (20 mg quinine base per kg bodyweight per day) in 50 ml of water, divide into 4 or more parts and give this as an enema during the day. Stop the enema as soon the patient regains consciousness, then give the necessary medicine by mouth. If quinine is not available, you may try artemisia-enema: Pour 50 ml of boiling water over 1,5 g of dried or 7,5 g of fresh leaves, wait for at least 15 minutes, filter, and allow to cool. Administer this tea as an enema, divided into 4 or more doses, in the course of the day. Repeat this procedure for seven days, or until the patient can drink again. In the meantime, buy the other medicine because artemisia enema alone may be not enough for this baby.

#### **5. Children 4-11 months old (or bodyweight up to 10 kg)**

Give half of a sulfa-pyri\* tablet once, or a total dose of 250 mg chloroquine base divided over 3 days, or a dose of 250 mg amodiaquine base divided over 3 days. Give the child plenty to drink (boiled water, breast milk...). If these drugs are either not available or not effective, then use artemisia. If the baby is willing to drink the tea, administer 50 ml of "*anamed* artemisia tea" (see note H above), 4 times daily, i.e. in total 200 ml per day, for at least 7 days. Most probably, the baby will more readily take "*anamed* artemisia sugar" (see note L above): Give a level teaspoonful 4 times daily, i.e. a daily total of 4 teaspoonfuls. If the baby is unconscious, try the following: Take quinine syrup, or dissolve quinine tablets (20 mg quinine base per kg bodyweight per day) in 50 ml of water, divide into 4 or more parts and give this as an enema during the day. Stop the enema as soon the patient regains consciousness, then give the necessary medicine by mouth. If quinine is not available, you may try artemisia-enema: Pour 100 ml of boiling water over 3 g of dried or 15 g of fresh leaves, wait for at least 15 minutes, filter, and allow to cool. Administer this tea as an enema, divided into 4 or more doses, in the course of the day. Repeat this procedure for seven days, or until the patient can drink again. In the meantime, buy the other medicine because artemisia enema alone may be not enough for this baby. For this age group, *Artemisia annua* may also be combined with proguanil or cotrimoxazol.

#### **6. Children 1-2 years old (or bodyweight up to 14 kg)**

If the child is willing to drink the tea, administer 75 ml of "*anamed* artemisia tea" (see note H above), 4 times daily, i.e. in total 300 ml per day, for at least 7 days. Most probably the child will more readily take "*anamed* artemisia sugar" (see note L above): Give a level teaspoonful 5 times daily, i.e. a daily total of 5 teaspoonfuls, for at least 7 days. To be safe, add three-quarters of a sulfa-pyri\* tablet once, or a total dose of 350 mg of chloroquine base divided over 3 days, or a total dose of 350 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, cool, boiled water...) If the patient is unconscious, try the following: Pour 150 ml of boiling water over 4,5 g of dried or 22,5 g of fresh artemisia leaves, wait for at least 15 minutes, filter and

allow to cool. Add quinine tablets or quinine syrup (20 mg quinine base per kg bodyweight). Give as an enema, divided into 4 or more doses in the course of the day. Repeat this enema for seven days. As soon the patient can drink again, give all the medicine by mouth. For this age group, *Artemisia annua* may also be combined with proguanil, cotrimoxazol or Malarone.

#### **7. Children 3-4 years old (or bodyweight up to 18 kg)**

If the child is willing to drink the tea, administer 100 ml of "*anamed* artemisia tea" (see note H above), 4 times daily, i.e. in total 400 ml per day, for at least 7 days. Most probably the child will more readily take "*anamed* artemisia sugar" (see note L above): Give 2 level teaspoonfuls 4 times daily, i.e. a daily total of 8 teaspoonfuls, for at least 7 days. To be safe, add one sulfa-pyri\* tablet once, or a total dose of 450 mg of chloroquine base divided over 3 days, or a total dose of 450 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, water...). If the patient is unconscious, try the following: Pour 200 ml of boiling water over 6 g of dried or 30 g of fresh artemisia leaves, wait for at least 15 minutes, filter and allow to cool. Add quinine tablets or quinine syrup (20 mg quinine base per kg bodyweight). Give as an enema, divided into 4 or more doses in the course of the day. Repeat this enema for seven days. As soon the patient can drink again, give all the medicine by mouth. For this age group, *Artemisia annua* can also be combined with proguanil, cotrimoxazol or Malarone.

#### **8. Children 5-9 years old (or bodyweight up to 29 kg)**

You may use artemisia: Pour 600 ml of boiling water over 3 g of dried artemisia leaves (or over 15 g of fresh artemisia leaves). Wait at least 15 minutes, then filter, divide into 4 cups and give one cup 4 times a day. Repeat this procedure for at least 7 days. If the child refuses to drink this tea, it will more readily accept "*anamed* artemisia sugar" (see note L): Give two level teaspoonfuls 5 times daily, i.e. 10 teaspoonfuls in total, for at least 7 days. If this treatment alone is not effective enough, add one and a half sulfa-pyri\* tablets once, or a total dose of 700 mg of chloroquine base divided over 3 days, or a total dose of 700 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, water...) If the patient is unconscious, try the following: Pour 300 ml of boiling water over 9 g of dried or 45 g of fresh leaves, wait for at least 15 minutes, filter and allow to cool. Give as an enema, divided into 4 or more doses during the day. In case of need, you may dissolve quinine tablets (or quinine syrup) in this artemisia-enema (20 mg quinine base per kg bodyweight per day). Repeat this enema for seven days. As soon the patient can drink again, give all medicine by mouth. For this age group, *Artemisia annua* can also be combined with proguanil, cotrimoxazol, Malarone or primaquin.

#### **9. Children 10-11 years old (or bodyweight up to 39 kg)**

You may use artemisia: Pour 700 ml of boiling water over 3,5g of dried artemisia leaves (or over 17,5 g of fresh artemisia leaves). Wait at least 15 minutes, then filter, divide into 4 cups and give one cup 4 times a day. Repeat this procedure for at least 7 days. If this treatment alone is not effective, add two sulfa-pyri\* tablets once, or a total dose of 900 mg of chloroquine base divided over 3 days, or a total dose of 900 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, water...). If the patient is unconscious, try the following: Pour 350 ml of boiling water over 10,5 g of dried or 52,5 g of fresh leaves, wait for at least 15 minutes, filter and allow to cool. Give as an enema, divided into 4 or more doses during the day. In case of need, you may dissolve quinine tablets (or quinine syrup) in this artemisia-enema (20 mg quinine base per kg bodyweight per day). Repeat this enema for seven days. As soon the patient can drink again, give all medicine by mouth. For this age group, *Artemisia annua* can also be combined with proguanil, cotrimoxazol, Malarone, primaquin, doxycyclin or tetracyclin.

### **10. Children 12-13 years old (or bodyweight up to 49 kg)**

You may use artemisia: Pour 800 ml of boiling water over 4g of dried artemisia leaves (or over 20 g of fresh artemisia leaves). Wait at least 15 minutes, then filter, divide into 4 cups and give one cup 4 times a day. Repeat this procedure for at least 7 days. If this treatment alone is not effective, add two and a half sulfa-pyri\* tablets once, or a total dose of 1200 mg of chloroquine base divided over 3 days, or a total dose of 1200 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, water...). If the patient is unconscious, try the following: Pour 400 ml of boiling water over 12 g of dried or 60 g of fresh leaves, wait for at least 15 minutes, filter and allow to cool. Give as an enema, divided into 4 or more doses during the day. In case of need, you may dissolve quinine tablets (or quinine syrup) in this artemisia-enema (20 mg quinine base per kg bodyweight per day). Repeat this enema for seven days. As soon the patient can drink again, give all medicine by mouth. For this age group, *Artemisia annua* can also be combined with proguanil, cotrimoxazol, Malarone, primaquin, doxycyclin or tetracyclin.

### **11. Children more than 13 years old and adults (bodyweight more than 50 kg)**

You may use artemisia: Pour 1 litre of boiling water over 5 g of dried artemisia leaves (or over 25 g of fresh artemisia leaves). Wait at least 15 minutes, then filter, divide into 4 cups and give one cup 4 times a day. Repeat this procedure for at least 7 days. If this treatment alone is not effective, add 3 sulfa-pyri\* tablets once, or a total dose of 1500 mg of chloroquine base divided over 3 days, or a total dose of 1500 mg of amodiaquine base divided over 3 days. Give plenty to drink (lemon grass tea, water...). If the patient is unconscious, try the following: Pour 500 ml of boiling water over 15 g of dried or 75 g of fresh leaves, wait for at least 15 minutes, filter and allow to cool. Give as an enema, divided into 4 or more doses during the day. In case of need, you may dissolve quinine tablets (or quinine syrup) in this artemisia-enema (20 mg quinine base per kg bodyweight per day). Repeat this enema for seven days. As soon the patient can drink again, give all medicine by mouth. For this age group, *Artemisia annua* can also be combined with proguanil, cotrimoxazol, Malarone, primaquin, doxycyclin or tetracyclin.

## **8.6 Artemisia and cancer**

Artemisinin is already patented as medicine for cancer and is used by more and more doctors in the treatment of tumours. We recommend, however, A-3 tea. So with the approval of your doctor, you may drink: In the acute phase drink one litre of A-3 tea every day made with 5 – 10 g of dried artemisia leaves (depending on the severity of the disease this may be for a week or even for months). In the chronic phase, drink daily one cup of A-3 tea (250ml) made of 1.25 g of A-3, and continue for weeks, or even years. Or swallow the same quantity of pounded, very cleanly harvested, A-3 powder. The experience of cancer patients who use A-3 so far seems to indicate that

- a) sometimes the condition improves very dramatically,
- b) sometimes A-3 seems to have little or no effect,
- c) when taken alongside chemo or radiotherapy; the negative side effects of these therapies are sometimes slightly and sometimes significantly less severe.

## 8.7 Other uses for *Artemisia annua anamed*

### A. MEDICINAL USES - INTERNALLY

**Caution:** For use with pregnant women, please see the precautions mentioned above.

With the following complaints, you may choose whether you take artemisia in the higher daily dosage of 5 or even 10g or the lower dosage of 1.25g.

**Higher dose:** Pour 1 litre of boiling water over 5g (or even 10g) of dried leaves, or 25g of fresh leaves, and drink during the day. 5g dried and sieved leaves are equivalent to 4 teaspoonfuls.

**Lower dose:** Pour 250ml (1 big cup) of boiling water over 1.25 g of dried leaves or 6.25 g of fresh leaves and drink during the day. 1.25 g dried and sieved leaves are equivalent to 1 rounded teaspoonful.

**Prevention of Malaria:** Many anamed co-workers in Africa have found that when they regularly take artemisia tea, they have malaria much less frequently, if at all, and if they do, then much less seriously than previously. Today, out of enlightened self interest, some large firms (for example in Burundi, Cameroon and Uganda), recommend their workers to drink artemisia tea as a malaria prophylaxis.

a.) Expatriates and visitors from Europe (i.e. with no immunity to malaria) who wish to try this approach should proceed as follows: Pour one cup (250 ml) of boiling water over about 1.25 g of dried *Artemisia annua anamed* (about one teaspoonful) every morning before breakfast. After at least 15 minutes, e.g. after breakfast, filter and drink this tea. The tea should be drunk all at once, and not in the course of the day. In this way the concentration of artemisinin in the blood is, for a short period of time, four times the level required to kill the malaria parasites. Children should take less, according to their bodyweight. Those who cannot drink this bitter tea should take the same amount of leaves, pulverise them, and every morning mix 1.25 g of this powder with some yoghurt, groundnut butter or honey. Start with this on the day of arrival, take daily whilst abroad, and continue for at least 3 weeks after returning home.

b.) Persons that are born and live in the Tropics (i.e. with some immunity to malaria) may drink a cup of artemisia tea once or twice a week. This reduces the number of malaria attacks by about 50%.

**AIDS:** Supportive treatment to strengthen **the immune system:** Artemisinin has already been patented as an AIDS therapy, as a biological ARV. In many anamed groups, AIDS patients drink artemisia tea, in a higher or lower dose, every day of their lives. Whenever possible moringa leaf powder, lemon grass tea, a lot of garlic and aloe gel are also taken. For more information, see the *anamed* publication "AIDS and Natural Medicine", order number 115.

**Bilharzia:** *Artemisia annua* reduces the number of bilharzias pathogens. Give the higher dose (5g/day) for 2 to 3 weeks. If available, combine this treatment with a conventional treatment. If possible, check the result of this treatment in a laboratory and send us your results. Investigations in which infected animals were treated with artemether (i.e. pure artemisinin) showed positive results.

**Bronchitis and sore throat:** Pour boiling water onto some fresh or dried artemisia leaves, put the container on a low heat and inhale the vapour. For sore throats, gargle with artemisia tea.

**Candida albicans in the mouth:** Chew some artemisia leaves throughout the day. Children may prefer a mixture of one teaspoonful of honey with one of dried, powdered artemisia leaves.

**Candida albicans in the bowels:** Drink artemisia tea, made as for malaria, for 12 days.

**Chikungunya and Dengue Fever:** Drink artemisia tea according to the higher dose for two weeks. According to feedback we have received, the period of fever and pain is reduced.

**Fever, common cold:** When an infection first occurs, take 3 litres of lemon grass tea each day. Only if the temperature persists, or if either flu or a cough persists, then take 1 litre of artemisia tea (higher dose) and 2 litres of lemon grass each day for 7 to 12 days.

**Haemorrhoids:** This is the oldest recorded use of artemisia tea in traditional Chinese medicine. Drink one litre of artemisia tea each day. In the Gamo Gofa region of Ethiopia many people suffer chronic haemorrhoids, and have had great success with this treatment (in the higher dose – see above). For mild haemorrhoids, drink an occasional cup of artemisia tea (lower dosage). Externally also use artemisia ointment (see chapter 12).

**Lupus erythematosus** (a disease that causes tissues to become inflamed, red and swollen): High dosis for 4 weeks, if there is no improvement, stop the treatment with artemisia; otherwise continue with the low dose.

**Stomach and Intestinal Problems, e.g. ulcerative colitis, Crohn's disease, diverticulitis and chronic dysentery, also various rheumatic diseases, arthritis, soft-tissue rheumatism, borreliosis, babesia:** Take artemisia tea in the higher dose for 7 days, and then in the lower dose until the symptoms disappear. Artemisia disinfects the system and modulates the immune system (brings it back into balance).

**Other diseases:** We have received isolated reports of astonishingly good results with a range of other diseases and complaints, including gout, diabetes, high blood pressure, warts, osteoporosis, epilepsy, glandular fever, migraine, psoriasis and leishmaniosis. The gate is wide open for further research! The patients take tea using 5g of artemisia each day for a week. If there is no improvement, the treatment is stopped. Otherwise treatment is continued with 5g in the acute phase and then 1.25 g in the chronic phase.

## **B. MEDICINAL USES – EXTERNALLY:**

**Infected wounds:** Gently boil leaves for 20 minutes in very little water, and lay the cooled paste on the wound. Change twice a day. For closed boils, use garlic, see Chapter 2.

**Eye infections:** Many people in the Tropics are blind (trachoma) because, as babies or young children, when troubled by flies, they could not afford either expensive pharmaceuticals or a doctor. The following two recipes are for emergencies only, when sterile eye drops or eye ointment are not available. Europeans should be cautious, as they

often have an allergic reaction to artemisia pollen: Ensure that they are not allergic, and that the tea with which they bathe their eyes is made only from leaves, and not from flowers!

**Recipe A:** Boil 25 g of fresh or 5 g of dried artemisia leaves with 1 cup of water (200 ml) for 5 minutes. Filter through a (coffee) paper filter. Put a clean cotton cloth into this tea and briefly boil again. Allow to cool and put the wet cloth onto the eyes for about 5 minutes.

**Recipe B:** Mix 10 g of clean, dried and pulverised artemisia leaves (without flowers!) with 100 ml olive oil and 10 g bees wax. Heat in a clean saucepan (without a water bath), stirring constantly. Using a thermometer, keep the mixture at 95-100 degrees centigrade for 15 minutes. Filter immediately through filter paper and pour into clean containers (e.g. seal 5 g into small polythene bags). Put a small amount into the affected eye.

Even in disaster areas, keep everything as sterile as possible. With both recipes, repeat this treatment several times a day. Also treat the eyes with aloe gel, and support this treatment by drinking artemisia tea internally.

**Skin problems; athlete's foot, haemorrhoids, eczema:** Use artemisia ointment for its mild antiseptic effect. Pulverise 2.5 g of artemisia leaves and mix with 100 ml of vegetable oil (the best is olive oil, otherwise peanut or sunflower oil). Then prepare as described in Chapter 12. Use within 1 year. Always apply on moist skin and rub in well.

## C. FURTHER APPLICATIONS

**Veterinary medicine.** We have received several positive reports. The most remarkable is the treatment of cancer in dogs. In general, after harvesting artemisia leaves, the remaining stems can be given to the animals so that they can nibble them according to their need.

Artemisia treats their internal **bacterial infections**, and even the fatal **coccidiosis**.

Other animals may be given cut, fresh leaves, or dried leaves mixed into their feed. For hens, pigs, doves etc., as replacement for the harmful antibiotics, try 10 g of dried artemisia leaves in 1 kg feed, and give for 5 to 10 days.

Researchers in Romania have given affected hens 15 g of dried artemisia leaves in one kilo of dry fodder to treat eimeriosis, a disease of the intestinal lining. *Artemisia annua* (sweet wormwood) is also known for the treatment of worms and flukes.

**Insect repellent:** Farmers in Tanzania have found that, when rows of maize plants are alternated with rows of artemisia, the maize suffer from fewer insect pests and therefore require little or no insecticide.

**Mosquito repellent:** To repel mosquitoes, keep several artemisia plants or keep fresh artemisia branches in a vase inside the house.

**Moths:** Put dried *Artemisia annua* leaves in cloth or paper bags amongst your clothes.

**Drinks:** To make a refreshing drink to replace commercial drinks, boil 5g of dried or 25g of fresh artemisia leaves in 1 litre of water for 10 minutes. To one cup of this tea, add 20 cups of good water and the juice of 10 lemons. Serve very cool.

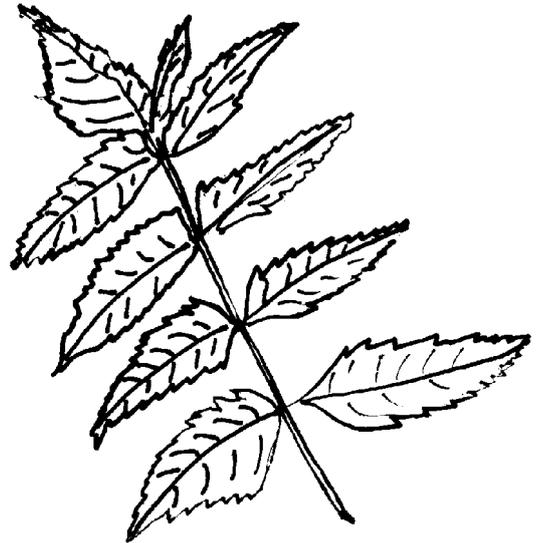
## Chapter 9. *Azadirachta indica* (Neem)

Neem originates from India, where it is held in the highest esteem. Indians have taken it with them to foreign lands, because for them "*it symbolises a continuity of tradition and fulfils the need to live in intimate harmony with nature*".

Soaps, cosmetics, pharmaceuticals and agricultural pesticides based on neem are used increasingly in every continent of the world, particularly in Europe and North America.

**9.1 Botanical description.** Family: Meliaceae (Mahogany family)

Neem grows best where the rainfall is between 250 and 2000mm per year and the soil is deep, well-drained and sandy. It can survive severe drought, and grow on barren, dry, highly degraded soils, which it will eventually turn into productive land. It will not thrive where the soil has a high moisture content. It grows within the temperature range 4 to 40°C, and at altitudes from sea level up to about 2000m.



Neem trees are evergreen. They live for up to 300 years, and can grow up to 30 metres high and 20 wide. They normally start fruiting after 3 to 5 years, and become fully productive after 10 years. Under favourable conditions, one tree will yield about 50kg of fruit per year and 350kg of green leaves. The 50kg fruits give 30kg of seeds, which in turn give about 6kg of oil and 24kg of oil seed cake.

### 9.2 Propagation

Neem trees are best propagated from their seeds. Choose fresh seeds - they only germinate if less than 3 months old. Remove the shells, and place these kernels in 10 sheets of wet newspaper. Put this in a warm place, and ensure that the newspaper is always moist. After a week, roots develop. Remove the newspaper and place the seeds on sandy soil in a deep seed tray in a light place, but out of direct sunlight. After 2 weeks plant them individually in pots using compost made up of 50% soil and 50% well rotted compost. Plant them in their final growing positions after 3 months.

To propagate from a cutting, strip a small twig of its leaves and stick into moist ground. To propagate from a root, dig about 2 metres from the trunk of a mature tree, and find a horizontal root of between 2 and 4 cm thick. Cut a length of about 20 cm, and bury 5 cm deep.

Neem trees can be planted on the upper slopes of hills, unproductive wasteland, roadsides, in shallow rocky soil and even near the coast.

### 9.3 Harvesting and storing neem seeds

Wash the seeds, and dry them thoroughly in the sun for a few days. Store them in airy containers, e.g. a jute sack or basket, never in a plastic bag or sack, in order to prevent any possibility of toxic, fungal growth.

## 9.4 Preparation of neem oil (used in medicine and agriculture)

First, shell the seeds. The easiest way is to put the seeds in a large mortar and to pound them gently until the shells split open. Be careful to split the shells without crushing the kernels.

Pour the mixture of shells and kernels from a height into a basket. The kernels should fall into the basket, and the lighter shells be blown away. Repeat this process until all the shells are removed. Remove any rotten seeds, which have lost their light brown colour, as these may have become poisonous. Return the healthy kernels to the mortar and pulverise them until they become a brown, sticky powder. Knead this paste by hand. You must add just a little water so that the paste can be readily kneaded by hand. After kneading for a while, the oil begins to ooze out. Squeeze the paste more tightly, and more oil comes out. Continue kneading and squeezing until no more oil comes out. In this way about 100 to 150ml oil can be extracted from one kilogram of neem seeds. The solid residue is called neem seed cake, and can be used as livestock feed, fertiliser and a natural pesticide.

## 9.5 Use in medicine

**SIDE-EFFECTS:** Treatments with neem, especially internally, should not be continued for long periods. Excessive use of neem may cause liver damage.

### A. Tooth and mouth care

Tooth care is very important. Almost everywhere, people are eating too much sugar.

**Toothbrush:** Use a small twig from the tree. This provides mechanical and natural chemical cleaning and cares for the gums as well as the teeth. (Neem bark extracts are now used in some commercial toothpastes and mouthwashes.)

**Toothpowder:** Thoroughly wash some neem tree bark, cut into small pieces and dry thoroughly. Pound it to a fine powder. Heat kitchen salt in a saucepan to remove all moisture. In a new mortar, pound together one cup of very hot salt and one cup of neem bark powder. Sieve through a nylon cloth. Keep in a well-labelled air-tight container.

Use it like toothpaste. Neem not only cleans the teeth, but cares for the gums as well. The nasty gum disease pyorrhoea, characterised by inflammation and sometimes bleeding, is significantly improved using neem bark powder.

### B. Skin treatment

Neem is effective in treating most skin infections such as acne, fungal infections, psoriasis, scabies and eczema. It can be used also to treat allergic reactions.

- **Take a bath!** Traditionally Indian people bathe in hot water containing neem leaves.
- **Ointments:**
  - Mild neem ointment: Mix 10 g of dried leaves with 100 g of vegetable oil, heat for one hour in a waterbath, filter and add 10 g of melted beeswax.
  - Stronger neem ointment: Mix 10 g of dried, powdered kernels with 100 g of vegetable oil, heat for one hour in a waterbath, filter and add 10 g of melted beeswax.
  - Very strong neem ointment: Melt 10 g of beeswax in 100 ml of vegetable oil. When nearly cold, add 10 ml of neem oil.

- **Tincture:** Soak 20g of dried leaves in 100ml of 70% alcohol (ethanol for external use, or alcohol made in the village). After one week, filter the solution. Immediately before use, mix a teaspoonful of this tincture with a teaspoonful of vegetable oil and apply to the affected areas.

**Athlete's foot.** Rub leaves on the affected area. Alternatively use a tincture / oil mixture.

**Hair care.** Use a decoction of neem leaves as a head wash for lice and dandruff.

**Skin treatment with smallpox or chicken pox.** Neem oil or tincture may also provide anti-viral treatment for smallpox or chicken pox.

**Warts.** Apply neem oil or tincture directly to the skin.

**Scabies.** There are several possibilities:

- a) Pound leaves to a mush with a little water, and rub onto the affected area.
- b) Rub neem oil onto the affected skin.
- c) Ground to a paste fresh neem leaves and turmeric in the ratio 4:1 by weight (or a handful of neem leaves to a piece of turmeric  $\frac{1}{2}$  the length of the index finger). Rub all over the body and leave to dry.

**Scrofula, indolent ulcers, ringworm.** Apply neem oil. If the reaction is too strong, dilute with vegetable oil. Alternatively, boil some leaves in just enough water for 10 minutes, and then lay the leaves as a hot compress on the lesion for 15 minutes morning and evening. Some people recommend this treatment also for leprosy wounds, but follow your doctor's advice.

**Infected burns.** Boil one handful of fresh leaves in 1 litre of water for 20 minutes, filter while still very hot (to avoid contamination), cool, and use immediately to wash infected burns. Prepare and use fresh tea in this way three times a day. Put the patient under a mosquito net to avoid new infections by flies.

**Boils.** If the boils are blind, a poultice of fresh leaves can be applied.

**Open boils, ulcers, and eczema.** The leaves must be boiled for 10 minutes in little water before they are applied as a poultice.

**Candida.** Candida is a yeast-like fungus that is always present in the mucous, but it can get out of control, leading to lesions in the mouth, in the vagina and on the skin. Mix one part neem oil with 9 parts of the following substances and apply them:

for candida in the mouth; honey.

for candida in the vagina; yoghurt or vegetable oil.

for candida on the skin; castor oil or any other vegetable oil.

**Stubborn wounds that refuse to heal.** Treat with neem oil twice a day.

### C. Malaria

Make a tea by pouring 1 litre of boiling water over 5 g dried leaves (or 10 g for serious cases). Drink in four portions at evenly-spaced intervals throughout the day. Drink plenty of other liquids, ideally 2 litres per day of lemon grass tea. Read Chapter 5 on malaria. Such tea may possibly be used also to treat measles and diarrhoea. Caution: as already stated, excessive use of neem tea can cause liver problems. For prevention, add a tiny amount of

neem oil to the fuel in kerosene lamps to keep mosquitoes away, and chew a few leaves each week to increase your immunity.

### 9.6 Medicated soaps or shampoo

Take 100g of ordinary soap. Grate it into fine pieces, add a little water and between 1 and 10g of neem oil. Heat gently until thoroughly mixed, and pour into moulds, and leave to dry. The neem oil gives the soap anti-bacterial properties. Neem based beauty products such as facial creams and shampoos (99 ml shampoo plus 1 ml neem oil) are increasingly popular in Europe and North America.

### 9.7 Veterinary Medicine and livestock feed

Apply neem products on animals to repel ticks, fleas and lice, to soothe cuts and bruises and to cure scabies. Depending on the severity of the complaint, use the (mild) decoction of leaves, the (stronger) decoction of crushed seeds, or the (strongest) neem oil. Or pound neem seeds (including shells) to a fine powder and rub this into the skin of the animal.

Use neem cake and leaves as a supplement for livestock. The leaves contain minerals, a high protein content (15%) and a low cellulose content.

### 9.8 Neem as insecticide spray: preparation and use of neem water extract

The seeds do not need to be shelled. Pound either two handfuls of kernels until they become a coarse powder, or simply pound the whole fruit. Repeat this twice more, each time with two further handfuls. If no kernels are available, use 10 handfuls of fresh, pounded leaves. Add to a bucket of water (about 10 litres), stir vigorously and leave to stand overnight. Filter. If no sprayer is available, make a home-made brush from fine straw or something similar. Dip it into the extract, and pass it over each plant several times, trying to spread the liquid as evenly as possible over all the leaves. Repeat the spraying every 4 to 5 days. Note that not all insects are affected with equal rapidity. When watering crops, water underneath the plants, so as not to wash this repellent off the leaves.

### 9.9 Neem in seed and food storage

Mix dried neem leaves with rice, wheat and other grains before storing for several months. Neem leaves, oil or extracts repel insects such as weevils, flour beetles, bean-seed beetles and potato moths. Infested grain can be fumigated with smoke from burning dried neem leaves. To preserve beans for sowing, 2 to 3ml of neem oil is required per kg beans. That means about 250ml oil per 100kg sack. The beans must be mixed thoroughly with the oil to ensure the oil is spread evenly over the beans. Mix a small quantity at a time in a plastic bowl. 1 kg of dried seeds or dried leaves, always finely powdered, can also be used.

**Pest resistant storage bins** for grain can be made by mixing neem leaves and ash into the clay.

**Clothes** can also be protected from moths by putting dried neem leaves into the folds.



The leaves of *Melia azedarach* (left) and neem, *Azadirachta indica* (right). These two trees have very similar medicinal and insecticidal properties. For internal use, however, we recommend the neem because it has been much better researched.

## Chapter 10. *Carica papaya* (pawpaw or papaya)

### 10.1 Botanical description. Family: Caricaceae

Originates from tropical America. It is not a true tree because it does not produce wood. It is a tree-like herb. It grows rapidly, producing fruit in less than one year. It continues to flower, except during severe water shortage. It is evergreen, and can survive drought. Plants are either male or female, or, occasionally, both together.

It requires good rainfall or to be irrigated, but it also requires soil that is well-drained, it cannot tolerate waterlogging. It grows in a wide temperature range, but is killed by frost. It grows up to an altitude of 1,500m.

### 10.2 Propagation and care

From seed. Sow 1 cm deep in sandy soil in trays, and transfer to pots one week after germination, which should be between one and four weeks. Put three seedlings together. Allow them to enjoy the morning sun. After 6 months, when they flower, remove the males and inferior females.

Nematodes build up on land used for pawpaw. It is therefore wise to rotate with other crops, and to work neem cake into the soil. Be careful, however, because pawpaw are sensitive to root disturbance.



### 10.3 Uses of pawpaw

#### A. Enjoy the fruit! Prevent Vitamin A, B, or C deficiency

Eat plenty ripe pawpaw fruits. We need vitamin A for good eyesight, vitamin B for good nerves and vitamin C to strengthen the immune system, which enables the body to fight infections.

#### B. Worms

The sap of the unripe pawpaw is usually effective with all types of intestinal worms. Wash a knife in boiling water, wash an unripe fruit while it is still hanging on the tree, and make vertical cuts into the skin. Collect the sap directly into a teaspoon or cup.

Caution: This sap is dangerous to the eyes.

This medicine should be taken in the morning on an empty stomach, together with a lot of water and a laxative.

Possible laxatives are:

1. Eat several very ripe mangoes or pawpaws.
2. Pharmaceutical castor oil.

3. *Cassia occidentalis* or *Cassia alata*. Boil one tablespoon dried leaves or root bark for 10 minutes in one litre of water. Drink the full litre - it takes effect after about 8 hours.

The treatment should be given once only, but repeated after about a week in order to ensure that all worms are removed. The treatment can also be given when the patient already suffers diarrhoea.

Table 10: Dosage of papaya sap for the treatment of intestinal worms

Age	Dosage
6 months to 1 year	½ teaspoon
1 year to 3 years	1 teaspoon
4 years to 6 years	2 teaspoons
7 years to 13 years	3 teaspoons
14 years to adult	4 teaspoons

### C. As a prophylactic (preventive measure) for worms and amoebas

Every day chew a piece of pawpaw leaf, about 5cm square in size. Or, at least once a week, chew and swallow one tablespoon of pawpaw seeds. In northern Mozambique, whole schools are treated in this way! Worms seem to hate the taste more than people!

### D. Indigestion

Pawpaw contains papaine, an enzyme for digestion. If you have digestion problems, take a few drops of pawpaw sap or a small piece of pawpaw leaf with your food.

### E. Cough

Dig up a few pawpaw roots (not the main root to avoid destroying the plant!), wash thoroughly, cut into pieces and boil half a handful in one litre of water for 15 minutes. Filter. Adults should drink this tea in the course of the day. Children less, depending on their body weight.

### F. Asthma attacks

Take up smoking, but of pawpaw leaves! Dry and crush young pawpaw leaves and smoke them in a pipe or as cigarettes - or burn the leaves next to your bed and inhale the smoke. Alternatively, drink tea made from one handful of pawpaw leaves or one handful of asthma weed (*Euphorbia hirta*).

### G. Cleansing

Rubbed on the skin, together with plenty of water, pawpaw leaves clean the body very effectively as a natural soap! Equally, they can be used to wash coloured clothes.

**H. Diarrhoea:** See Chapter 4.

**I. Malaria:** Pour one litre of boiling water over one handful of clean, fresh leaves. Leave to stand for 15 minutes and filter. Drink in portions through the day. In addition, drink 2 litres of lemon grass tea. Continue this treatment for 7 days. See Chapter 5.

**J. Open boils, infected wounds:** See Chapter 2

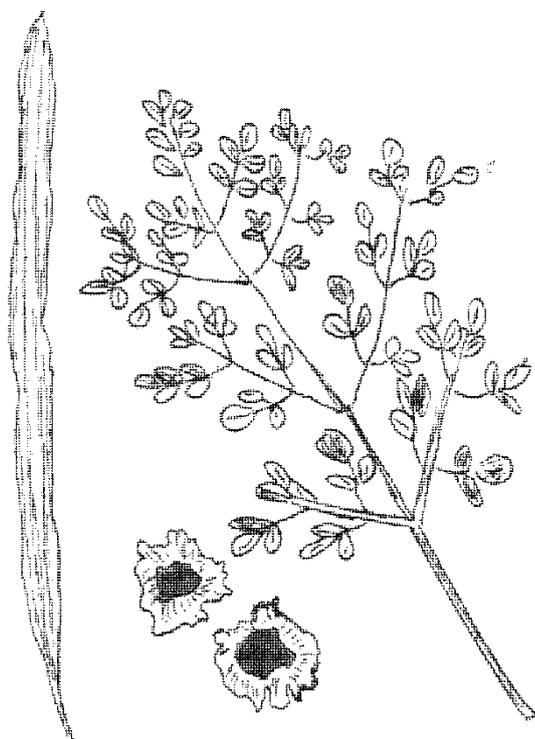
**K. Fungal infections:** See Chapter 3.

## Chapter 11. *Moringa oleifera* (Drumstick Tree)

### 11.1 Botanical description. Family: Moringaceae

*Moringa oleifera* is a small, fast-growing deciduous tree or shrub that reaches 12m in height when mature. It is native to India. Its wood is soft, its bark light and it tends to be deeply rooted. It grows best where the temperature ranges from 26 to 40°C, the annual rainfall is more than 500mm and the altitude is less than 1000m. It is tolerant to drought. Although it bears pods, it is not leguminous.

*Moringa stenopetala* is native to Kenya and Ethiopia, growing at altitudes of up to 2000m. It is even more drought resistant than *M. oleifera*. Its leaves, pods and seeds are larger, and it is thought to have similar remarkable properties (see below).



### 11.2 Propagation.

The tree grows rapidly from seeds or cuttings, even in poor soils. As the tree grows, the more it is cut back, the more leaves it will produce.

### 11.3 Constituents

For nutrition: The leaves are outstanding as a source of **vitamins A, B and C**. They contain many **minerals**, particularly calcium, iron and phosphorus. They are also rich in **protein**, and contain many essential amino acids, i.e. amino acids that are required for good health, which the body cannot produce itself. Fresh leaves have 4 times the calcium content of milk and 4 times the vitamin A content of carrots – and these become concentrated in moringa leaf powder.

For medicine: *M. oleifera* has constituents with antibiotic properties (isothiocyanates). These same

substances inhibit the growth of (cancerous) tumours.

### 11.4 Eat as a nutritious vegetable.

Plant a moringa tree outside your kitchen window – it is very nutritious! The leaves of *M. oleifera* are eaten in northern Ghana as a vegetable, and the leaves of *M. stenopetala* in Ethiopia. Wherever anamed has introduced *M. oleifera*, its leaf powder is being used very successfully to combat malnutrition, particularly amongst children.

The leaves can be eaten fresh. Harvest them when they are at their best, and store them as moringa leaf powder for use in the dry season when few other vegetables are available.

**To make moringa leaf powder:** Harvest the leaves, dry within 3 days, if possible in the shade. In strong sunlight they lose their vitamin A. Pound, sieve to remove the stems and store in airtight jars in the dark. If possible, check the moisture content with a hygrometer, so that you know exactly how long you can store the leaf powder.

This leaf powder can be added to rice, grains, sauces, in fact anything at all. For children under five, suffering from malnutrition and other health problems, a teaspoonful should be

added to their food three times a day. For children over five, add 2 or 3 teaspoonfuls to every meal, depending on their age. The pods may also be eaten. When very young, they should be cut into short pieces and cooked and eaten as green beans. When they are bigger, boil them and scoop out the seeds and flesh. When they are bigger and older, but still green, just use the unripe seeds - called moringa peas. Fry them in oil and eat as nuts. The flowers can be eaten as they are or used to make tea. Bees produce delicious honey from the pollen of moringa flowers.

### **11.5 Moringa oil**

To make moringa oil, do not use moringa seeds straight from the plant, but seeds that have been well dried. Remove the shells, roast in a saucepan, pound and then mill on a stone. Make a thick paste with a little water. Put into boiling water and continue to boil. Add more water so that the mixture remains fluid. The oil rises to the surface and can be skimmed off. The residue, moringa seed cake, can be used for water purification or as fertiliser.

Moringa oil can be used:

- a) for cooking. It is as nutritionally valuable as olive oil. The oil is slow to turn rancid, and is excellent in salads.
- b) for lubricating delicate mechanisms.
- c) for soap-making and as a base for cosmetics.
- d) in lamps.

### **11.6 Use as medicine**

Most plant parts, including root, bark, stem, leaf, flower and pods, have medicinal value. We have been told of the following treatments:

- a) Eating the leaves is not only very nourishing but also helps in cases of diarrhoea, increases the amount of breast milk, and treats anaemia and ulcers.
- b) Gout, stomach disorders and rheumatism: moringa seed oil is beneficial.
- c) For diabetes and hypertension: Moringa is anti-diabetic, but also has the effect of reducing blood pressure! Drink tea made from the leaves several times a day. Several patients have reported that their blood sugar levels and their high blood pressure were reduced by regularly eating moringa leaf powder. Depending on the severity, they took between one and three heaped teaspoonfuls per day. Some patients found it more effective to chew and swallow one to three peeled seed kernels of *Moringa oleifera* 3 times a day, or to drink moringa tea. Have your blood sugar levels and blood pressure checked regularly!
- d) Skin infections and scabies:  
Prepare a paste by pounding the seeds and adding a little water. Boil the root or bark of the branch, and apply the liquid to the affected area. Pound fresh leaves and squeeze the juice onto the affected area.
- e) Toothache: Pound the fresh root and apply on the affected area.
- f) Wounds: Pound fresh leaves or scraps of bark, add a little water and boil for 20 minutes, allow to cool and then place directly onto the wound.
- g) For colds, steep some flowers in boiling water for about 5 minutes. Drink as needed.

- h) Dizziness and hangover: Make a soup with the leaves and drink.
- i) Rheumatism: Pound fresh roots and apply to the affected area. Alternatively, roast some seeds, pound to a powder, mix with vegetable oil and apply to the affected area.

**Caution:** Root bark should not be eaten, nor should the roots be used in any way by pregnant women.

### 11.7 Use in agriculture

- a) Agro-forestry: Moringa is very useful for wind-breaks and hedges - it grows again rapidly after being cut back. In fact, frequent cutting back will increase the production of leaves. Hedges are perhaps the best way of combining the benefits of moringa, e.g. leaf production, firewood, shade, a structure for climbing plants, forming a wind-break, preventing soil erosion and dividing the fields.
- b) Cattle fodder: Moringa leaves can constitute up to 40% of their feed, and is reported to increase milk production.
- c) Fertilizer: The seed-cake that remains after oil extraction makes a good fertilizer or animal feed.
- d) Moringa can be used as a green manure. Plant it densely (50 x 50cm) and plough it in when it reaches a height of about half a metre.
- e) Moringa can be used as a green "meadow". Plant it densely (10 x 10 cm), and mow it several times to get animal fodder.

### 11.8 Use to purify water.

Seed pods should be left to mature on the tree and harvested when dry. The number of seeds needed to treat river water depends on how much suspended matter the water contains. Users quickly become familiar with the changing needs of their particular water as the quantity of sediment changes with the seasons.

To treat 20 litres of water (the amount carried in the average large bucket) one needs 5-20 seeds of *M. oleifera*, depending on the degree of pollution. Remove the light 'wings' and shells of the seeds and finely pound them. Add a small amount of water to the crushed seed to form a paste. Put the paste into a clean bottle - a soda bottle is ideal. Add a cup (200ml) of water and shake for 5 minutes. This action activates the chemicals in the crushed seed.

Filter this solution through filter paper or white cotton cloth into a 20 litre bucket of the water you want to purify. Stir rapidly for 2 minutes, followed by slow stirring for 10-15 minutes. During this slow mixing period, the moringa seed binds together (coagulates) the fine particles and bacteria into larger particles which sink and settle on the bottom of the bucket. After some hours or overnight, clear water can be drawn off.

This process will remove 90-99.9 per cent of the bacteria, as well as clearing the water. Caution: Drink the water the same day. If the water is more polluted further purification is then recommended, either by boiling (if possible in a solar oven) or filtering with a simple sand filter.

Note: Moringa seeds can be used first for oil extraction. The remaining press cake, which can be dried and stored, is just as effective as the fresh seeds for water treatment.

## Section IV: Production of some medicines

### Chapter 12: Oils and Ointments

Oils and ointments are convenient herbal medicines for treating skin complaints of all sorts – rashes, cuts, bruises, sprains, burns, wounds - and even rheumatic complaints.

Ointments can be stored for several years – that is very useful when herbs are not available the whole year round.

A dispensary or health centre can have a good stock of ointments always available.

Community groups can make a little income from making and selling them.

#### 12.1 Equipment needed:

2 cooking pots, one small, one large, to make the water bath.

1 measuring jug or tomato tins.

1 sieve or filter cloth and pegs.

Small containers, e.g. film (30ml) containers.

#### 12.2 Materials needed

---Dried, pounded herbs.

---Any good vegetable oil, e.g. shea butter, palm oil, palm kernel oil, sunflower oil, groundnut oil etc.– NOT Vaseline. If you use home-made oil, it is important that all the water is eliminated and all the enzymes are destroyed. In that case, first heat the oil to 100 degrees Celsius.

---Beeswax or colourless candle wax. Be careful, not all candles are made of wax.

#### 12.3 Preparation

##### a) Prepare the plant material.

Cut finely. Dry within 3 days on a clean sheet. In very hot regions, dry in the shade. Where it is cooler, or the humidity is high, dry in full sun. If after three days the material is still not crisp, dry in a solar oven below 40°C. Pound to a fine powder!

##### b) Heat the plant material in oil.

Many medicinal components dissolve in hot vegetable oil.

Prepare a water bath as shown in the diagram. Ideally the handles of the inner pot rest on the sides of the outer pot.

This arrangement ensures that the oil never reaches a temperature higher than 100°C. If the oil and plant material were to become hotter, the medicinal components may be destroyed.

It is very important that no water mixes with the oil.

One can keep an ointment for two years or more, but if water is present the mixture goes rancid within a few days.

Pour the mixture of powdered, dried plant material and oil (quantities according to the table below) into the inner pot of the water bath. Heat the oil and plant material in this way for an hour after the water has started to boil. Stir the mixture every 10 minutes.

Alternatively use a solar oven, and follow the same procedure.

##### c) Filter the mixture.

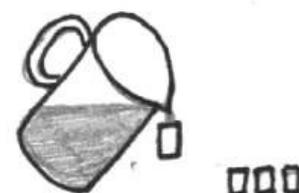
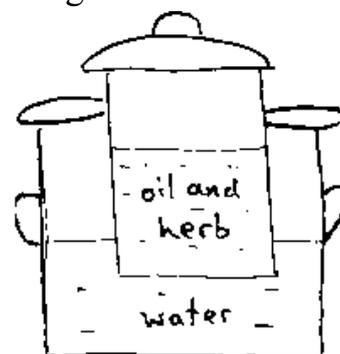
Filter the mixture into a measuring jug or clean container.

Squeeze the plant material to ensure that you collect all the valuable medicinal oil you have produced.

Now your medicinal oil is ready. It can be used as it is as medicine for external use.

##### d) To produce an ointment, add wax.

Melt your beeswax or candle wax and add to the oil until the volume increases by 10%.



E.g. you have 600ml of medicinal oil, then add beeswax until you have a volume of 660 ml. Stir well. Quickly and carefully pour the mixture into the small containers.

**e) Write labels.**

Labels are essential! On the labels write your name, the name of the ointment, the date of production and the expiry date (usually two years).

**Table: Medicinal oils**

Name of oil (or ointment)	Uses	Medicinal herb – dried and powdered	Pharmacy – using a scale	Village – measuring in ml	Seminar* – using 75 ml tomato tins
			Weight of leaves in 1000ml of oil	Volume of powdered leaves in 1000 ml of oil	No. Of tins of leaves with 15 tins of oil
Baby	Skin care	None	Use no herb. Only good vegetable oil.		
Beauty	Skin care	Lemon tree and / or aloe leaves	70 g	200 ml	3 tins
Haemorrhoid	Inflammation in general	(see Note 1)	25 g	75 ml	1 tin
Chamomile	Inflammation	Chamomile flowers	100 g	300 ml	4 tins
Artemisia	Antiseptic skin care	Artemisia leaves	25 g	75 ml	1 tin
Eucalyptus or Massage	Insect repellent, rheumatism	Eucalyptus leaves	100 g	300 ml	4 tins
Onion	Burns, bed sores, wounds	Chopped onion	50 g	100 ml	1½ tins (see Note 2)
Rheumatism	Rheumatism	Hot Chillies	100 g	300 ml	4 tins (see Note 3)
Anti-fungal	Fungal infections	See Note 4	50 g	150 ml	2 tins
Moringa	To treat or avoid sunburn	Leaves of Moringa oleifera	50g	150 ml	2 tins

\* Seminar production: These quantities are enough to fill around thirty plastic containers of around 30ml

Note 1: **Haemorrhoid oil:** Use leaves of one, some or all of: artemisia, basil, guava, or chamomile flowers.

Note 2: **Onion ointment.** This method requires no water bath. Finely chop the onion and dry it for one day. Fry the onion in the oil until it is golden brown. Sieve, add the melted beeswax to the clear oil, stir and pour into clean containers.

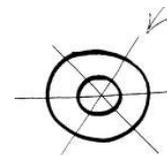
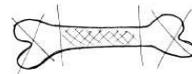
Note 3: **Rheumatism ointment:** This method requires no water bath. Heat the chilli powder together with the oil at around 95 degree Celsius during 15 minutes on a very low fire. Wear protection glasses! Because capsaicine, the main constituent of chillies (*Capsicum frutescens*), is so dangerous, you must write on the label “Caution: keep away from the eyes. If you do touch the eyes, wash with plenty cold water”.

Note 4: Anti-fungal oil/ointment: Leaves of one, some or all of: neem, *Melia azedarach*, *Cassia alata* or *Artemisia annua*.

## Chapter 13: THE "BLACK STONE"

### 13.1 Preparation of the "white stones".

- Make friends with your butcher! Take the middle third of a cow's thigh bone. Using a butcher's saw, cut it into rings about 2 cm wide, and then cut these into about 6 pieces.
- Remove the bone marrow and any gristle.
- Boil the pieces of bone in water for about 10 minutes.
- Boil again for 10 minutes using fresh water containing soap, e.g. Omo. NaOH is even better than soap. This is to remove the grease.
- Repeat step (d).
- Boil once again in fresh water for 10 minutes to remove the soap.
- Dry in the sun for 5 days or in the solar oven for 1 day. Your "stone" looks like ivory.



### 13.2 Preparation of the "black stones"

- Use a file to take away any rough edges.
- Wrap each piece in 2 or 3 layers of aluminium foil.
- Place the pieces in the red, glowing centre of a charcoal fire. Depending on the heat of the fire and the size of the bones, this process may take ten minutes or half an hour.
- It takes some skill and experience to be able to judge when they are ready. A good rule of thumb is to wait until the (very unpleasant) smell disappears. Then check one piece, taking great care not to burn your fingers. The stone should be black and firm. If it is very brown, it is not yet ready, if on the other hand there is white dust, it has already been heated for too long and has started to oxidise and disintegrate.
- Take all the stones from the fire and place them in a closed container for 10 minutes to cool. Now remove the aluminium foil.
- The "black stone" is now ready for use.

### 13.3 Care of the "black stone"

Handle the "black stone" with great care. Protect it from dust, and keep it completely dry. Store it in an air-tight container.

### 13.4 Regeneration of "black stones"

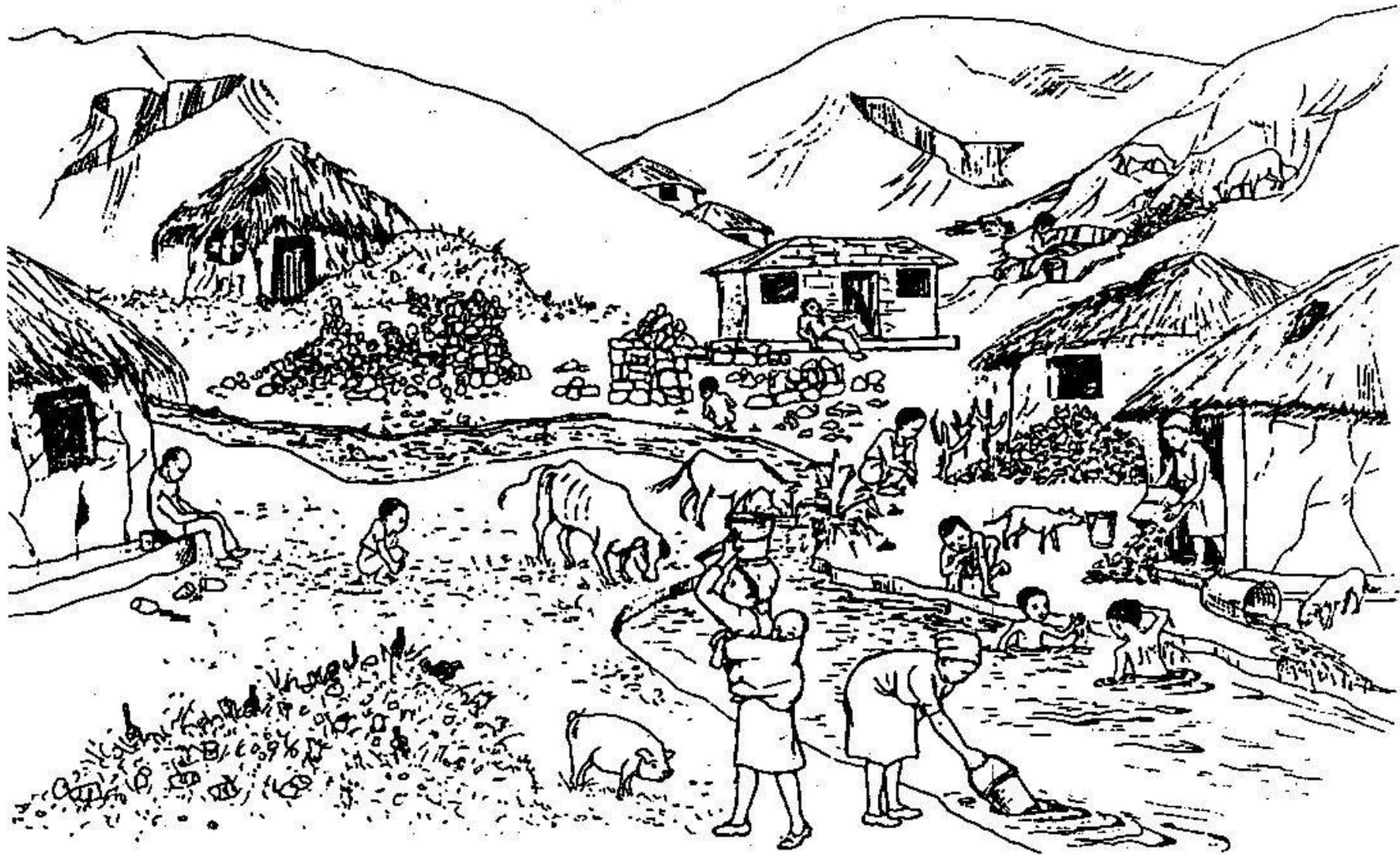
It is better to make new stones. But, if necessary, boil the used stone in soapy water for 10 minutes, then again in fresh water for 10 minutes and finally dry in the solar oven.

### 13.5 Uses for the "black stone"

- Boils, small abscesses and infected wounds:** Break the black stone to the size of the boil. To do this, place the black stone in a new plastic bag, cover it with a cloth and strike it with a hammer. Press it onto the boil/abscess to make contact with the liquid. The black stone empties the boil, thus mechanically removing most of the germs.
- Snakebites and bites of poisonous insects, e.g. scorpions:** Press onto the wound to make contact with the liquid. As soon as the stone contacts the blood, it sucks itself tight to the wound and does not let go until all the poison and secretion has been absorbed. This may take as long as a day.

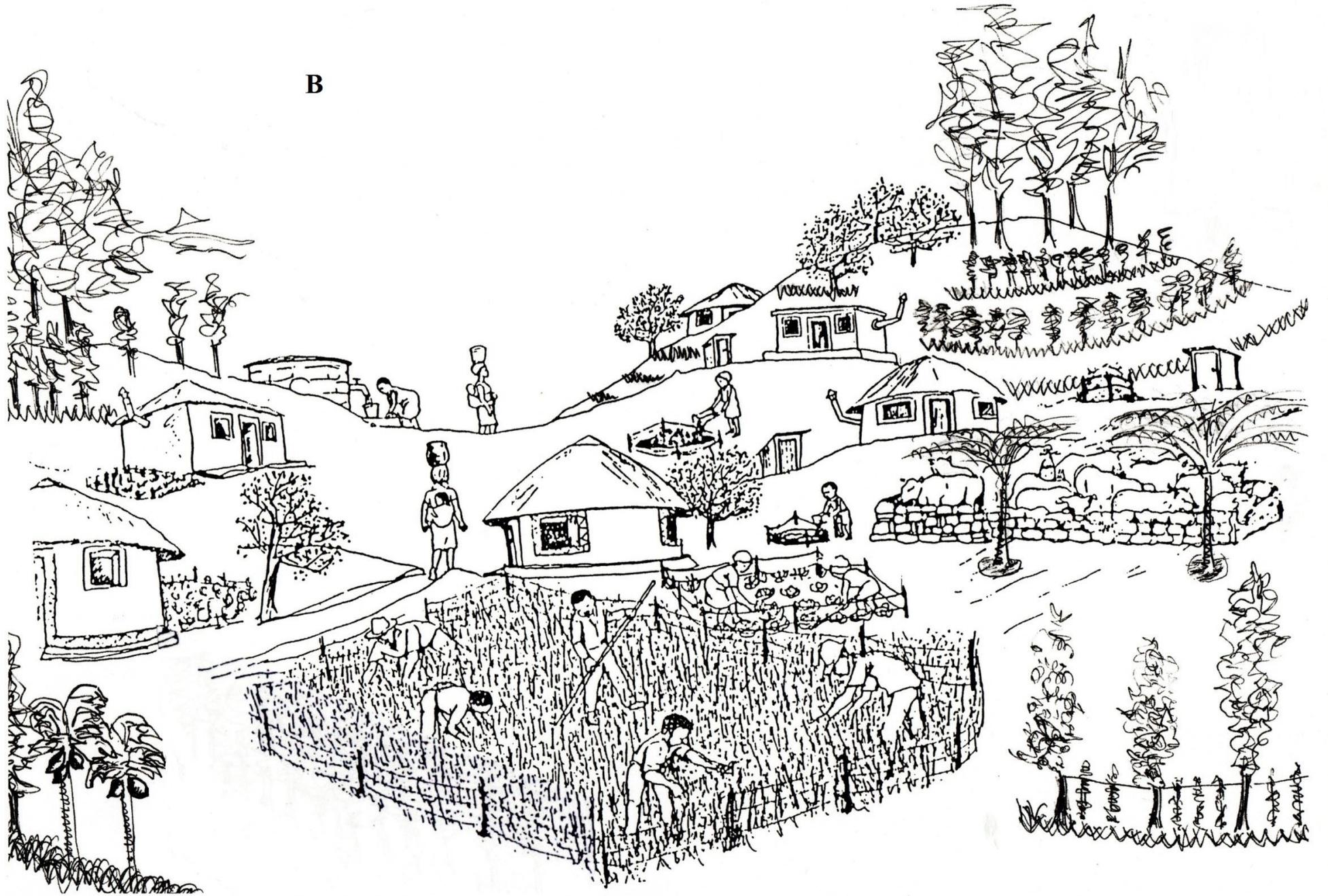
A black stone is, therefore, an essential component of every tropical first aid kit! It must be used immediately after the snake bite.

**13.6 How does the black stone work?** It contains a myriad of tiny passages. Through the process of capillary action, a low pressure is created in these passages. As a result the liquid flows from the wound and into the stone until the wound is dry. Just like a sponge in water! See more information in the "foundation text", anamed order number 105.



A

B



## Section V: The Basis of Natural Medicine Practice

### Chapter 14. Groupwork: What is Development?

In groups compare the villages A and B (see the two previous pages, drawn by an African artist) using the following questions:

- a) What are the differences between the two villages?
- b) Is there anything good in village A?
- c) If village B were to send you to village A as a development worker, how would you work (priorities, approach, sustainability)?

### Chapter 15. Establish a Garden of Medicinal Plants

It is important for families and hospitals to make a garden of medicinal plants, so that:

- you almost always have ready access to the plants you need to make your medicines.
- plants available in the wild are not destroyed through over-use.
- you have a resource on your doorstep for teaching others.

Another possible advantage: The medicinal garden of a clinic or hospital can provide a place where the relatives of the poorest patients can work as payment for their treatment.

#### 15.1 The production garden

1. First of all, prepare the contour lines, i.e. the lines where the soil is at the same level (same altitude). You can use an "A frame" (triangle) for that purpose. Plant a double row of live hedges (for example *Leucaena leucocephala*, *Tephrosia vogelii*, *Acacia mangium*, *Crotalaria grahamiana*, *Sesbania sesban*, *Cajanus cajan*, etc.) along the contour lines. The distance between the lines depends on the slope, but generally you can plan a distance of 3 meters on a strong slope and 5 meters on a low slope. In the plains, plant the hedges as you like (as fences surrounding the fields or along the roads/paths,...). Plant grass-rows below the hedges on the slope such as vetiver, lemon grass, different species of *Pennisetum*, *Brachiaria*, *Setaria*... Hedges aim at providing green manure (cut them regularly down to 1 meter height), while grasses aim at protecting the soil against erosion. Together they fix the slope along the contour lines like belts around the hill. However if you want to install an agroforestry system, which brings you a little shadow, a favorable microclimate for the plants, a protection against strong rains or aggressive storms as well as green material for your animals and your compost, you need to plant "agroforestry trees" which have a light canopy such as *Maesopsis eminii*, *Toona ciliata*, *Moringa oleifera*, *Melia azedarach*, *Grevillea robusta*,....Plant these trees every 10 meters in the hedge/grass row. It is recommended to diversify the species so as to ensure the ecological balance of the system (diversification instead of monoculture). And finally don't forget to plant "forestry trees" with a strong canopy (such as *Albizia lebeck*, *Dalbergia* spp, *Khaya senegalensis*, *Tamarindus indica*, *Terminalia mantaly*) as "protecting trees" in locations where the erosion starts. For example at the top of a slope. Be aware that the resilience of an ecological system is becoming more and more important to challenge a climate which is more and more unpredictable.

2. Work the hedge trimmings into the soil, or use them as a mulch.
3. Between the hedges, establish a mixed culture of the most needed medicinal plants (“alley cropping”). Be sure to include all the plants described in this book.
4. Make a nursery, in which you propagate cuttings of *Artemisia annua*, and raise other seedlings, e.g. moringa, papaya, neem and aloe suckers.
5. Although eucalyptus is a valuable medicinal plant, do not include this tree in your garden. Eucalyptus dries the soil out, and makes it acidic, and therefore infertile.
6. Just as important are fruit and vegetables. These may be mixed in your medicinal garden, or they may be grown separately.
7. At all times of year, minimise the area of bare soil. Use mulch generously, e.g using banana leaves, trimmings from the hedges or straw. This conserves moisture and increases the amount of humus. Also, it is seldom realised that, when exposed to the full heat of the sun, earth loses fertility because important microbes are destroyed.
8. Compost all your organic waste and use the resultant rich, black soil when planting.

### **15.2 The demonstration garden**

Prepare a separate small garden as a demonstration garden in such a place that many people will notice it, e.g. in front of a school, hospital or church. Use this garden for training. Grow only one plant of each species. Prepare labels for each plant. You may, for example, use black paint to write the scientific name, the English name and the local name on a piece of flattened corrugated iron, supported on a stick.

## Chapter 16: Bible Passages concerning Development

### 1. CHRISTIAN CONVICTIONS

Luke 6:9-10 and Matth 12:11-13 Jesus heals a paralysed man on the Sabbath  
Philippians 2:5-8 Have the same attitude as Jesus  
1 Corinthians 13:1-13 The most important thing is love  
Matth 28, 19-20 Go and make disciples of all nations

### 2. FIGHT AGAINST THE ROAMING OF THE FLOCKS

Proverbs 12:10 The righteous man cares for the needs of his animals  
Exodus 22.5 The livestock owner must pay for the damage caused by his animals  
I Samuel 16:11 David was looking after the sheep  
Jeremiah 23:1 Bad shepherds scatter the sheep

### 3. LET'S AVOID THE BUSHFIRE

Genesis 1:26,29,31 God saw all that he had made, and it was very good  
Job 22:20 Fire devours the wealth  
Jeremiah 22:7 Destroyers will put cedar beams to the fire  
Zechariah 11:1-4 "... the rich pastures are destroyed"

### 4. LET'S PLANT TEN TREES PER PERSON EVERY YEAR

Luke 6:43-45 and Matthew 7:16-20 A good tree bears good fruit  
Job 14:7 A cut tree will sprout again  
Ezekiel 31:1-9 The beauty of the Cedar of Lebanon

### 5. LET'S PRACTICE FAMILY-PLANNING

Luke 14:28-30 If you want to build a tower, first check that you can afford to pay for it  
1 Timothy 5:8 One must be able to provide for one's children  
Genesis 33:13,14 "The Lord knows children are tender"

### 6. LET'S WORK TOGETHER, MAN AND WOMAN

Genesis 2:17-19 The man was working in the field  
II Thessalonians 3:7-10 If a man will not work, he shall not eat  
Ephesians 5:33 A man shall love his wife like himself

### 7. LET'S BE PROUD OF NATURAL MEDICINE

I Samuel 16:14-23 Music provides relief for Saul  
Mark 8:22-26 and John 9:1-12 Jesus heals a blind man with spit and his hands  
Luke 10:34 The Good Samaritan heals with oil and wine

### 8. FOR EVERY FAMILY A DISH-RACK AND TOILET

Exodus 19:10 God tells Moses to make the people wash their clothes  
Leviticus 15 Bathe and wash clothes and bed clothes when there are bodily discharges  
Deuteronomy 23:13-15 Relieve yourself into a hole

### 9. LET'S BE FAITHFUL AND CAREFUL

Leviticus 15 Sexual conduct for the Children of Israel  
Exodus 20:14 You shall not commit adultery  
Malachi 2:14-15, Proverbs 7:1-27 and Proverbs 5:1-21 Be faithful  
I Corinthians 6:12-20 About sexual immorality

### 10. WORKING TOGETHER MEANS JOY FOR ALL

1 Corinthians 12:12-31 The Body of Christ  
1 Corinthians 1:10 Agree with one another  
Ephesians 4:3-5 There is one body

## Chapter 17: Code of Conduct for "Natural Healers"

By formally recognising and following this code of conduct, traditional healers can practise as "Natural Healers". In this way they can avoid the negative aspects of their profession, and they are able to collaborate with "modern medicine", in the way that the WHO has promoted, often in vain, since the Alma Ata Declaration of 1978.

### A. "Natural Healers" will never;

- 1) give injections.
- 2) make tattoos.
- 3) perform any form of surgery.
- 4) make deep cuttings (i.e. cuts in the body in the hope of releasing pain or bad spirits. E.g. in the case of rheumatism, to "let out the pain", or with cancer, to "release the bad spirits".)
- 5) make shallow cuts in which to place medicine.
- 6) remove the so-called false teeth from children. (The new teeth of young children who suffer malnutrition shine through the gum. Some believe that the old tooth must be removed.)
- 7) remove the tonsils, or remove or cut the uvula.
- 8) make abortions.
- 9) use any form of witchcraft.
- 10) use excrement.
- 11) use human flesh.
- 12) use animals in any way.
- 13) give enemas, except water-enemas to treat constipation, or artemisia-enemas to treat malaria in unconscious patients.
- 14) pretend to heal HIV / AIDS.
- 15) make female genital cutting (this is human mutilation!)

### B. "Natural Healers" will seek to keep individuals and the community in good health by;

- 1) providing preventive care for one village or district.
- 2) educating people in preventive health care, e.g. not to use soaps containing mercury.
- 3) playing an active part in a local, community based, Natural Medicine group.
- 4) protecting medicinal plants.
- 5) learning the scientific names of the plants used.
- 6) establishing a production and a demonstration garden of medicinal and nutritious plants.
- 7) using medicinal teas in a proper way (see "Natural Medicine in the Tropics I", Chapter 4.2).
- 8) using other safe recipes to produce medicines such as ointments, medicinal oils, ORS, powders, black stone etc.
- 9) specialising in one disease.
- 10) giving accurate dosages.
- 11) using a fever thermometer.
- 12) collaborating with the hospital, and referring patients that they cannot treat, or that have a high temperature, or who are in any other critical condition to the hospital.
- 13) accepting fair payments from patients, according to their means.
- 14) training others in Natural Medicine.
- 15) caring kindly for AIDS patients, and treating their symptoms and AIDS related diseases, so that they have a longer and more pleasant life.

By following this code of conduct each Natural Healer can become a Primary Health Care Worker. Similarly, by following the procedures listed under 2 above, each Primary Health Care Worker can become a Natural Healer!

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Front cover: Seminar participant in Nundu, Congo, extracts papaine (latex) from a pawpaw.

Back cover: "Inspired by the Bible, people of different nations help each other to appreciate medicinal plants." Picture by Gregor Müller, St Gallen, Switzerland.



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