



# THE **ENCYCLOPEDIA** OF ESSENTIAL **OILS**

The Complete Guide to the Use of Aromatic Oils in Aromatherapy, Herbalism, Health & Well-Being



JULIA LAWLESS

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## *To my mother, Kerttu*

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Ajowan	Cedarwood, Atlas	Guaiacwood
Allspice	Cedarwood, Texas	Helichrysum
Almond, Bitter	Cedarwood	Hops
Ambrette Seed	Virginian	Horseradish
Amyris	Celery Seed	Hyacinth
Angelica	Chamomile,	Hyssop
Anise, Star	German	Jaborandi
Aniseed	Chamomile,	Jasmine
Arnica	Maroc	Juniper
Asafetida	Chamomile,	Labdanum
Balm, Lemon	Roman	Lavandin
Balsam, Canadian	Chervil	Lavender, Spike
Balsam, Copaiba	Cinnamon	Lavender, True
Balsam, Peru	Citronella	Lemon
Balsam, Tolu	Clove	Lemongrass
Basil, Exotic	Coriander	Lime
Basil, French	Costus	Linaloe
Bay Laurel	Cubebs	Linden
Bay, West Indian	Cumin	Litsea Cubeba
Benzoin	Cypress	Lovage
Bergamot	Deertongue	Mandarin
Birch, Sweet	Dill	Marigold
Birch, White	Elecampane	Marjoram, Sweet
Boldo Leaf	Elemi	Mastic
Borneol	Eucalyptus, Blue	Melilotus
Boronia	Gum	Mimosa
Broom, Spanish	Eucalyptus,	Mint, Cornmint
Buchu	Lemon-Scented	Mint,
Cabreuva	Eucalyptus,	Peppermint
Cade	Broad-leaved	Mint, Spearmint
Cajeput	Peppermint	Mugwort
Calamintha	Fennel	Mustard
Calamus	Fir Needle, Silver	Myrrh
Camphor	Frankincense	Myrtle
Cananga	Galangal	Narcissus
Caraway	Galbanum	Niaouli
Cardomon	Gardenia	Nutmeg
Carrot Seed	Garlic	Oakmoss
Cascarilla Bark	Geranium	Onion
Cassia	Ginger	Opopanax
Cassie	Grapefruit	Orange, Bitter

Orange Blossom	Rosewood	Tea Tree
Orange, Sweet	Rue	Thuja
Oregano,	Sage, Clary	Thyme,
Common	Sage, Common	Common
Oregano,	Sage, Spanish	Tonka
Spanish	Sandalwood	Tuberose
Orris	Santolina	Turmeric
Palmarosa	Sassafras	Turpentine
Parsley	Savine	Valerian
Patchouli	Savory, Summer	Vanilla
Pennyroyal	Savory, Winter	Verbena, Lemon
Pepper, Black	Schinus Molle	Vetiver
Petitgrain	Snakeroot	Violet
Pine, Dwarf	Spikenard	Wintergreen
Pine, Longleaf	Spruce, Hemlock	Wormseed
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Rose, Cabbage	Tagetes	Yarrow
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Woodcut from the title page of the *Grete Herball*, 1526

# PREFACE

My own interest in essential oils and herbal remedies derives from the maternal side of my family who came from Finland, where home ‘simples’ retained popularity long after they had vanished from most parts of Britain. My Finnish grandmother knew a great deal about herbs and wild plants which she passed on to my mother, as she recalls:

Mama’s most important herb was parsley, which along with dill, marjoram, hops and others, were dried in bunches in the autumn, dangling at the ends of short lengths of cotton, all strung on a long length of thin rope stretching right across the kitchen stove. As scents are very evocative for remembering old things, I remember it so well – the strong and heady smell emanating from these herbs when they were hung up, and the stove was warm.

Later, as a biochemist, my mother became involved with the research of essential oils and plants, and helped inspire in me a fascination for herbs and the use of natural remedies. Without her early enthusiasm and guidance, I’m sure this book would never have been written.

In 1992 the first edition of this book was published in the UK. Since then it has been translated into many languages as well being released in several different formats, including an illustrated edition. With this new edition, I am very glad to have the opportunity to update my original work and add a few words to this preface.

In the twenty-year period since the original publication of *The Encyclopedia of Essential Oils*, the use of essential oils, together with the practice of aromatherapy in the West has undergone a radical transformation. At the beginning of the 1990s, aromatherapy was still considered a fringe practice and the use of essential oils in the home was by no means widespread. However, as scientific trials and clinical research have continued to confirm the potentiality of essential oils, they have become increasingly respected within the medical arena. This has been accompanied by a steady increase of public interest in holistic therapies and a sociological trend towards embracing all things ‘natural’ over the past two decades in Europe and the United States.

Nowadays, aromatherapy treatments are widely available and often offered in hospitals, while essential oils can be purchased in every town. This change in attitude has brought so many benefits, but it is worth also considering the dangers that have emerged with the commercialization of aromatherapy. Although essential oils are all wholly natural substances, they can be subject to adulteration, so it is important to always buy them from a reputable supplier (*see* page 198). It is also vital to check that any specific safety guidelines are followed with care at home. It is my hope that this new edition brings fresh life to the multifaceted and multicultural study of essential oils and to the field of contemporary aromatherapy.

## How to Use This Book

*The Encyclopaedia of Essential Oils* is divided into two parts:

**Part I** is a general introduction to aromatics, showing their changing role throughout history, from the ritual part they played in ancient civilizations, through medieval alchemy, to their modern day applications in aromatherapy, herbalism and perfumery.

**Part II** is a systematic survey of over 160 essential oils shown in alphabetical order according to the common name of the plants from which they are derived. Detailed information on each oil includes its botanical origins, herbal/folk tradition, odour characteristics, principal constituents and safety data, as well as its home and commercial uses.

This book can be approached in several ways:

1. It can be employed as a concise *reference guide* to a wide range of aromatic plants and oils, in the same way as a traditional herbal.
2. It can be used a *self-help manual*, showing how to use aromatherapy oils at home for the treatment of common complaints and to promote well-being.
3. It can be read from cover to cover as a *comprehensive textbook* on essential oils, shown in all their different aspects.

1. When using the book as a *reference guide* to essential oils, the name of the plant or oil may be found in the Botanical Index at the back of the book, where it is listed under:

- a) its common name: for example, frankincense;
- b) its Latin or botanical term: *Boswellia carteri*;
- c) its essential oil trade name: olibanum;
- d) or by its folk names: gum thus.

Other varieties, such as Indian frankincense (*Boswellia serrata*), may be found in the **Botanical Classification** section under their common family name 'Burseraceae', along with related species such as elemi, linaloe, myrrh and opopanax. Less common essential oils, such as blackcurrant (which is used mainly by the food industry), do not appear in the main body of the book, but are included in the **Botanical Classification** section under their common family name, in this case 'Grossulariaceae'.

2. When using the book as a *self-help manual* on aromatherapy, it is best to consult the **Therapeutic Index** at the end of the book, where common complaints are grouped according to different parts of the body:

- Skin Care
- Circulation, Muscles and Joints
- Respiratory System
- Digestive System
- Genito-urinary and Endocrine Systems
- Immune System
- Nervous System

If for example, we have been working long hours at a desk and have developed a painful cramp in our neck, we should turn to the section on **Circulation, Muscles and Joints** where we find the heading 'Muscular Cramp and Stiffness'. Of the essential oils which are listed, those shown in italics are generally considered to be the most useful and/or readily available, in this case allspice, lavender, marjoram, rosemary and black pepper.

The choice of which oil to use depends on what is to hand, and on assessing the quality of each oil by consulting their entry in Part II of the book. Special attention should be paid to the Safety Data on each oil: both allspice and black pepper are known to be skin irritants if used in high concentration; rosemary and marjoram should be avoided during pregnancy; rosemary should not be used by epileptics at all. On the basis of our assessment, we may choose to use lavender, marjoram and a little black pepper which would make an excellent blend. Some of the principles behind blending oils can be found in Chapter 5, **Creative Blending**.

The various methods of application are indicated by the letters **M**, massage; **C**, compress; **B**, bath etc. Turn to Chapter 4, **How to Use Essential Oils at Home**, where you will find instructions on how to make up a massage oil or compress, and how many drops of oil to use in a bath. Further information on how essential oils work in specific cases can be found in Chapter 3, **The Body – Actions and Applications**.

3. Used as a *comprehensive textbook*, ***The Encyclopaedia of Essential Oils*** provides a wealth of information about the essential oils themselves in all their various aspects, including their perfumery and flavouring applications. It shows the development of aromatics through history and the relationship between essential oils and other herbal products. It defines different kinds of aromatic materials and their methods of extraction, giving up-to-date areas of production. In addition, it includes information on their chemistry, pharmacology and safety levels. The ‘Actions’ ascribed to each plant refer either to the properties of the whole herb, or to parts of it, or to the essential oil. Difficult technical terms, mainly of a botanical or medical nature, are explained in the **General Glossary** at the end of the book.

However, since the therapeutic guidelines presented in the text are aimed primarily at the lay person without medical qualifications, the section dealing with the aromatherapy application of essential oils at home is limited to the treatment of common complaints only. Although there is a great deal of research being carried out at present into the potential uses of essential oils in the treatment of diseases such as cancer, AIDS and psychological disorders, these discussions fall beyond the scope of this book. References to the medical and folk use of particular plants in herbal medicine and their actions are intended to provide background information only, and are not intended as a guide for self-treatment.



PART I: AN INTRODUCTION TO AROMATICS

# 1. HISTORICAL ROOTS

## Natural Plant Origins

When we peel an orange, walk through a rose garden or rub a sprig of lavender between our fingers, we are all aware of the special scent of that plant. But what exactly is it that we can smell? Generally speaking, it is essential oils which give spices and herbs their specific scent and flavour, flowers and fruit their perfume. The essential oil in the orange peel is not difficult to identify; it is found in such profusion that it actually squirts out when we peel it. The minute droplets of oil which are contained in tiny pockets or glandular cells in the outer peel are very volatile, that is, they easily evaporate, infusing the air with their characteristic aroma.

But not all plants contain essential or volatile oils in such profusion. The aromatic content in the flowers of the rose is so very small that it takes one ton of petals to produce 300g of rose oil. It is not fully understood why some plants contain essential oils and others not. It is clear that the aromatic quality of the oils plays a role in the attraction or repulsion of certain insects or animals. It has also been suggested that they play an important part in the transpiration and life processes of the plant itself, and as a protection against disease. They have been described as the 'hormone' or 'life-blood' of a plant, due to their highly concentrated and essential nature.

Aromatic oils can be found in all the various parts of a plant, including the seeds, bark, root, leaves, flowers, wood, balsam and resin. The bitter orange tree, for example, yields orange oil from the fruit peel, petitgrain from the leaves and twigs, and neroli oil from the orange blossoms. The clove tree produces different types of essential oil from its buds, stalks and leaves, whereas the Scotch pine yields distinct oils from its needles, wood and resin. The wide range of aromatic materials obtained from natural sources and the art of their extraction and use has developed slowly over the course of time, but its origins reach back to the very heart of the earliest civilizations.

## Ancient Civilizations

Aromatic plants and oils have been used for thousands of years, as incense, perfumes and cosmetics and for their medical and culinary applications. Their ritual use constituted an integral part of the tradition in most early cultures, where their religious and therapeutic roles became inextricably intertwined. This type of practice is still in evidence: for example, in the East, sprigs of juniper are burnt in Tibetan temples as a form of purification; in the West, frankincense is used during the Roman Catholic mass.

In the ancient civilizations, perfumes were used as an expression of the animist and cosmic conceptions, responding above all to the exigencies of a cult ... associated at first with theophanies and incantations, the perfumes made by *fumigation*, *libation* and *ablution*, grew directly out of the ritual, and became an element in the art of therapy.<sup>1</sup>

The Vedic literature of India dating from around 2000 BC, lists over 700 substances including cinnamon, spikenard, ginger, myrrh, coriander and sandalwood. But aromatics were considered to be more than just perfumes; in the Indo-Aryan tongue, 'atar' means *smoke*, *wind*, *odour* and *essence*, and the *Rig Veda* codifies their use for both liturgical and therapeutic purposes. The manner in which it is written reflects a spiritual and philosophical outlook, in which humanity is seen as a part of nature, and the handling of herbs as a sacred task: 'Simples, you who have existed for so long, even before the Gods were born, I want to understand your seven hundred secrets! ... Come, you wise plants, heal this patient for me'.<sup>2</sup> Their understanding of plant lore developed into the traditional Indian or Ayurvedic system of medicine, which has enjoyed an unbroken transmission up to the present day.

The Chinese also have an ancient herbal tradition which accompanies the practice of acupuncture, the earliest records being in the *Yellow Emperor's Book of Internal Medicine* dating from more than 2000 years BC. Among the remedies are several aromatics such as opium and ginger which, apart from their therapeutic applications, are known to have been utilized for religious purposes since the earliest

times, as in the Li-ki and Tcheou-Li ceremonies. Borneo camphor is still used extensively in China today for ritual purposes.

But perhaps the most famous and richest associations concerning the first aromatic materials are those surrounding the ancient Egyptian civilization. Papyrus manuscripts dating back to the reign of Khufu, around 2800 BC, record the use of many medicinal herbs, while another papyrus written about 2000 BC speaks of 'fine oils and choice perfumes, and the incense of temples, whereby every god is gladdened'.<sup>3</sup> Aromatic gums and oils such as cedar and myrrh were employed in the embalming process, the remains of which are still detectable thousands of years later, along with traces of scented unguents and oils such as styrax and frankincense contained in a number of ornate jars and cosmetic pots found in the tombs. The complete iconography covering the process of preparation for such oils, balsams and fermented liqueurs was preserved in stone inscriptions by the people of the Nile valley. The Egyptians were, in fact, experts of cosmetology and renowned for their herbal preparations and ointments. One such remedy was known as 'kyphi'; a mixture of sixteen different ingredients which could be used as an incense, a perfume or taken internally as a medicine. It was said to be antiseptic, balsamic, soothing and an antidote to poison which, according to Plutarch, could lull one to sleep, allay anxieties and brighten dreams.

### **Treasures from the East**

Natural aromatics and perfume materials constituted one of the earliest trade items of the ancient world, being rare and highly prized. When the Jewish people began their exodus from Egypt to Israel around 1240 BC, they took with them many precious gums and oils together with knowledge of their use. On their journey, according to the Book of Exodus, the Lord transmitted to Moses the formula for a special anointing oil, which included myrrh, cinnamon, calamus, cassia and olive oil among its ingredients. This holy oil was used to consecrate Aaron and his sons into priesthood, which continued from generation to generation. Frankincense and myrrh, as treasures from the East, were offered to Jesus at his birth.

The Phoenician merchants also exported their scented oils and gums to the Arabian peninsula and gradually throughout the Mediterranean region, particularly Greece and Rome. They introduced the West to the riches of the Orient: they brought camphor from China, cinnamon from India, gums from Arabia and rose from Syria, always ensuring that they kept their trading routes a closely guarded secret.

The Greeks especially learnt a great deal from the Egyptians; Herodotus and Democritus, who visited Egypt during the fifth century BC, were later to transmit what they had learnt about perfumery and natural therapeutics. Herodotus was the first to record the method of distillation of turpentine, in about 425 BC, as well as furnishing the first information about perfumes and numerous other details regarding odorous materials. Dioscorides made a detailed study of the sources and uses of plants and aromatics employed by the Greeks and Romans which he compiled into a five volume materia medica, known as the *Herbarius*.

Hippocrates who was born in Greece about 460 BC and universally revered as the 'father of medicine', also prescribed perfumed fumigations and fomentations; indeed 'from Greek medical practice there is derived the term 'iatralypte', from the physician who cured by the use of aromatic unctions'.<sup>4</sup> One of the most famous of these Greek preparations, made from myrrh, cinnamon and cassia, was called 'megaleion' after its creator Megallus. Like the Egyptian 'kyphi', it could be used both as a perfume and as a remedy for skin inflammation and battle wounds.

The Romans were even more lavish in their use of perfumes and aromatic oils than the Greeks. They used three kinds of perfumes: 'lady'smata', solid unguents; 'stymmata', scented oils; and 'diapasmata', powdered perfumes. They were used to fragrance their hair, their bodies, their clothes and beds; large amounts of scented oil were used for massage after bathing. With the fall of the Roman Empire and the advent of Christianity, many of the Roman physicians fled to Constantinople taking the books of Galen, Hippocrates and Dioscorides with them. These great Graeco-Roman works were translated into Persian, Arabic and other languages, and at the end of the Byzantine Empire, their knowledge passed on to the Arab world. Europe, meanwhile, entered the so-called Dark Ages.

## Alchemy

Between the seventh and thirteenth centuries the Arabs produced many great men of science, among them Avicenna (AD 980–1037). This highly gifted physician and scholar wrote over a hundred books in his lifetime, one of which was devoted entirely to the flower most cherished by Islam, the rose. Among his discoveries, he has been credited with the invention of the refrigerated coil, a breakthrough in the art of distillation, which he used to produce pure essential oils and aromatic water. However, in 1975 Dr Paolo Rovesti led an archaeological expedition to Pakistan to investigate the ancient Indus Valley civilization. There, in the museum of Taxila at the foot of the Himalayas, he found a perfectly preserved distillation apparatus made of terracotta. The presence of perfume containers also exhibited in the museum dating from the same period, about 3000 BC, confirmed its use for the preparation of aromatic oils. This discovery suggests that the Arabs simply revived or improved upon a process that had been known for over 4000 years!

Rose water became one of the most popular scents and came to the West at the time of the Crusades, along with other exotic essences, and the method of distillation. By the thirteenth century, the ‘perfumes of Arabia’ were famous throughout Europe. During the Middle Ages, floors were strewn with aromatic plants and little herbal bouquets were carried as a protection against plague and other infectious diseases. Gradually the Europeans, lacking the gum-yielding trees of the Orient, began to experiment with their own native herbs such as lavender, sage and rosemary. By the sixteenth century lavender water and essential oils known as ‘chymical oils’ could be bought from the apothecary, and, following the invention of printing, the period 1470 to 1670 saw the publication of many herbals such as the *Grete Herball* published in 1526, some of which included illustrations of the retorts and stills used for the extraction of volatile oils.

In the hands of the philosophers, the art of distillation was employed in the practice of alchemy, the hermetic pursuit dedicated to the transformation of base metals into gold, the gross into the subtle. It was primarily a religious quest in which the various stages of the distillation process were equated with stages of an inner psychic transmutation, ‘dissolution and coagulation’: separation (black, lead), extraction (white, quicksilver), fusion (red, sulphur) and finally sublimation (gold or ‘lapis’). In the same way that aromatic material could be distilled to produce a pure and potent essence, so could the human emotions be refined and concentrated to reveal their valuable fruit, or true nature. In this context, volatile oils can be equated with the purified human psyche or ‘quintessence’ of the alchemists, being an emanation of matter and manifestation of spirit, mediator between the two realms.

Alchemy was the bridge across which the rich symbolism of the ancient world – Arab, Greek, Gnostic – was transported into our own era ... thus symbolism fell from the rarefied heights into the melting-pot, and began to be tested in a continuous, dynamic interaction with the findings of chemistry.<sup>5</sup>

## The Scientific Revolution

Throughout the Renaissance period, aromatic materials filled the pharmacopoeias which for many centuries remained the main protection against epidemics. Over the next few centuries the medicinal properties and applications of increasing numbers of new essential oils were analysed and recorded by the pharmacists. The list included both well-established aromatics such as cedar, cinnamon, frankincense, juniper, rose, rosemary, lavender and sage, but also essences like artemisia, cajeput, chervil, orange flower, valerian and pine.

The perfumery and distillation industries attracted illustrious names of the day and in the northern countries of Europe, especially at Grasse in France, flourishing commercial enterprises sprang up. By the end of the seventeenth century, the profession of perfumery broke away from the allied fields, and a distinction was made between perfumes and the aromatics that had become the domain of the apothecary.

Alchemy gave way to technical chemistry, and with it went the interest in the inter-relatedness of matter and spirit, and the interdependence of medicine and psychology. There developed the idea of combating speculation with logic and deductive reason. With the scientific revolution of the early

nineteenth century, chemists were able to identify for the first time the various constituents of the oils, and give them specific names such as 'geraniol', 'citronellol' and 'cineol'. In the *Yearbook of Pharmacy and Transactions of the British Pharmaceutical Conference* in 1907, we find for example:

A pilea of undetermined botanical species has yielded a white essential oil with an odour of turpentine ... A small amount of pinene was detected but its other constituents have not yet been identified. This oil is of interest as being the first instance of an essential oil derived from the family Uricaceae.<sup>6</sup>

It is ironic that this enthusiastic research laid the ground for the development of the oils' synthetic counterparts, and the growth of the modern drug industry. Herbal medicine and aromatic remedies lost their credibility as methods of treatment went out of the hands of the individual and into those of professionals. By the middle of the twentieth century, the role of essential oils had been reduced almost entirely to their employment in perfumes, cosmetics and foodstuffs.

## 2. AROMATHERAPY AND HERBALISM

### **The Birth of Aromatherapy**

The term 'aromatherapy' was first coined in 1928 by Gattefossé, a French chemist working in his family's perfumier business. He became fascinated with the therapeutic possibilities of the oils after discovering by accident that lavender was able to rapidly heal a severe burn on his hand and help prevent scarring. He also found that many of the essential oils were more effective in their totality than their synthetic substitutes or their isolated active ingredients. As early as 1904 Cuthbert Hall had shown that the antiseptic power of eucalyptus oil in its natural form was stronger than its isolated main active constituent, 'eucalyptol' or 'cineol'.

Another French doctor and scientist, Dr Jean Valnet, used essential oils as part of his programme by which he was able to successfully treat specific medical and psychiatric disorders, the results of which were published in 1964 as *Aromatherapie*.

The work of Valnet was studied by Madame Marguerite Maury who applied his research to her beauty therapy, in which she aimed to revitalize her clients by creating a 'strictly personal aromatic complex which she adapted to the subject's temperament and particular health problems. Hence, going far beyond any simple aesthetic objective, perfumed essences when correctly selected, represent many medicinal agents.'<sup>7</sup>

In some respects, the word 'aromatherapy' can be misleading because it suggests that it is a form of healing which works exclusively through our sense of smell, and on the emotions. This is not the case for, apart from its scent, each essential oil has an individual combination of constituents which interacts with the body's chemistry in a direct manner, which then in turn affects certain organs or systems as a whole. For example, when the oils are used externally in the form of a massage treatment, they are easily absorbed via the skin and transported throughout the body. This can be demonstrated by rubbing a clove of garlic on the soles of the feet; the volatile oil content will be taken into the blood and the odour will appear on the breath a little while later. It is interesting to note that different essential oils are absorbed through the skin at varying rates, for example:

Turpentine: 20 mins.

Eucalyptus and thyme: 20–40 mins.

Anise, bergamot and lemon: 40–60 mins.

Citronella, pine, lavender and geranium: 60–80 mins.

Coriander, rue and peppermint: 100–120 mins.

It is therefore important to recognize that essential oils have three distinct modes of action with regard to how they inter-relate with the human body: pharmacological, physiological and psychological. The pharmacological effect is concerned with the chemical changes which take place when an essential oil enters the bloodstream and reacts with the hormones and enzymes etc; the physiological mode is concerned with the way in which an essential oil affects the systems of the body, whether they are sedated or stimulated, etc; the psychological effect takes place when an essence is inhaled, and an individual responds to its odour. With relation to the first two points, aromatherapy has a great deal in common with the tradition of medical herbalism or phytotherapy – in other words, it is not simply the aroma which is important but also the chemical interaction between the oils and the body, and the physical changes which are brought about.

### **Herbal Medicine**

The practice of aromatherapy could be seen as part of the larger field of herbal medicine, since the essential oil is only one of many ways in which a plant can be prepared as a remedy. Since all essential oils are derived directly from plants, it can be valuable to see them within a botanical context rather than as isolated products. In some ways the use of aromatic oils for therapeutic purposes benefits

from being placed within a herbal context not only because it gives us further insight into their characteristics, but because the two forms of therapy are not synonymous, but complementary.

Although most plants which yield essential oils are also used in medical herbalism, it is important to distinguish the therapeutic qualities of a particular oil from those of the herb taken as a whole or prepared in another manner. German chamomile, for example, is used extensively in the form of a herbal preparation such as an infusion, tincture or decoction, apart from being utilized for its volatile oil. Chamazulene, a major constituent of the oil, helps to account for the herb's age-old reputation as a general relaxant and soothing skin care remedy, due to its pain-relieving, antispasmodic, wound-healing and anti-inflammatory activities. For the treatment of nervous conditions, insomnia and dermal irritation or disease, the essential oil is both useful and effective. But although the aromatic principle of the plant plays a central role in its overall character, the herb also contains a bitter component (anethic acid), tannins (tannic acid), mucilage and a glycoside among other things. The overall effect of the herb is the result of the action of all its pharmacologically active constituents which in the case of chamomile or *Matricaria* includes the astringency of the tannins and the stimulation of the bitters. The volatile oil is, of course, less concentrated in the form of an infusion, tincture or decoction, the potency of the oil is reduced (and inherently the safety margin increased), thus making the herbal preparation more suited to internal use.

Similarly with peppermint. Whilst the oil is eminently suited to the treatment of respiratory conditions as an inhalant, due in particular to its antispasmodic and antiseptic actions, for the longer term treatment of digestive disorders it is better to use extracts from the whole herb, where the action of the volatile oil is supported by the presence of bitters and tannins. In addition, in herbal medicine, the effect of one herb is usually supported and backed up by combining it with others.

Neither is it correct to assume that the essential oil is always the most active or therapeutically useful part of a plant. For example, although meadowsweet contains an essential oil outstanding in its antiseptic strength (according to Cavel,<sup>8</sup> 3.3cc of meadowsweet essence renders infertile 1000cc of microbic cultures in sewage, compared to 5.6cc of phenol per 1000cc), it also possesses several other valuable components, notably salicylic glycosides which are characterized by their excellent pain-relieving and anti-inflammatory qualities. Indeed, the familiar drug aspirin, being derived from salicylic acid, is named after this herb, its old country name being 'spiraea'.

The kernels of the (bitter and sweet) almond tree are used to produce a fixed oil commonly known as sweet almond oil, which has a great many cosmetic uses. The kernels from the bitter almond tree, which are used to produce the essential oil which gives marzipan its characteristic taste, also contain cyanide, the well-known poison, in its unrefined form. This shows that there can be a great difference in the properties of a plant, even the same part of a plant, depending upon how it has been prepared.

## **Therapeutic Guidelines**

As a general rule which is in line with the present-day aromatherapy 'code of practice', it is best to use essential oils as external remedies only. This is mainly due to the high concentration of the oils and the potential irritation or damage that they can cause to the mucous membranes and delicate stomach lining in undiluted form. There even seems to be some kind of natural order in this scheme, in that volatile oils mix readily with oils and ointments suited to external application, which are absorbed readily through the skin and vaporize easily for inhalation. When inhaled, they can affect an individual's mood or feelings, and at the same time cause physiological changes in the body. Indeed, in a Japanese experiment carried out in 1963, it was found that the effects of essential oils on the digestive system were likely to be stronger if they were inhaled than if they were ingested.

Herbs, on the other hand, yield up many of their qualities to water and alcohol which are appropriate for internal use but, lacking the concentrated aromatic element, they do not have the same subtle effects on the mind and emotions.

These are only superficial guidelines, for there are always exceptions to the rule. Plantain, for example, is an excellent wound-healing herb valuable for external use, although it does not contain any essential oil. Nor can we ignore the fact that a great many aromatic oils are used for flavouring our food and beverages and are consumed daily in minute amounts. Peppermint oil, for example, is used in a wide variety of alcoholic and non-alcoholic beverages, confectionery and prepared savoury

foods, although the highest average use does not exceed 0.104 per cent. The mint oils, which include spearmint and cornmint, are also used extensively by the pharmaceutical and cosmetic industries in products such as toothpaste, cough and cold remedies, and as fragrance components in soaps, creams, lotions, as well as colognes and perfumes. In addition, cornmint is frequently used as the starting material for the production of 'menthol' for use in the drug industry.

It can be seen that the use of essential oils covers a wide and varied spectrum. On the one hand they share the holistic qualities of natural plant remedies, although it is true that some herbalists view essential oils in much the same light as they regard synthetic drugs, being a 'part' of the whole, rather than the entire herb. On the other hand, they play an active role in the modern pharmaceutical industry, either in their entirety or in the form of isolated constituents such as 'phenol' or 'menthol'.

It is not the aim of this book to glorify natural remedies (some of which are in fact highly toxic) at the expense of scientific progress, nor to uphold the principles of our present-day drug-orientated culture, but simply to provide information about the oils themselves in their multifaceted nature.

## **Safety Precautions**

*Safety Data:* Always check with specific SAFETY DATA before using a new oil, especially with regard to toxicity levels, phototoxicity, dermal irritation and sensitization.

*Contra-indications:* Take note of any contra-indications when using particular oils. For example, fennel, hyssop and sage should be avoided by epileptics; clary sage should not be used while drinking alcohol; hops should not be used by anyone suffering from depression.

*High Blood Pressure:* Avoid the following oils in cases of high blood pressure: hyssop, rosemary, sage (all types) and thyme.

*Homoeopathy:* Homoeopathic treatment is not compatible with the following oils: black pepper, camphor, eucalyptus and the mint oils.

*Pregnancy:* During pregnancy use essential oils in half the usual stated amount. Take note of those oils which are contra-indicated in pregnancy.

*Babies and Children:* Use with care, in accordance with age.

Babies (0–12 months) – use 1 drop of lavender, rose, chamomile or mandarin diluted in 1 tsp base oil for massage or bathing.

Infants (1–5 years) – use 2–3 drops of 'safe' essential oils (non-toxic and non irritant to the skin), diluted in 1 tsp base oil for massage or bathing.

Children (6–12 years) – use as for adults but in half the stated amount.

Teenagers (over 12 years) – use as directed for adults.



### 3. THE BODY—ACTIONS AND APPLICATIONS

#### **How Essential Oils Work**

The therapeutic potential of essential oils, like other plant-derived remedies, has yet to be fully realized. Although numerous medical herbs have been utilized since antiquity, many of which have been exploited to provide the biologically active compounds which form the basis for most of our modern drugs (such as quinine and cocaine), there is still a great deal to be learnt about their precise pharmacology. This is particularly true of aromatic oils, which by their very nature have such a concentrated yet multifaceted make-up. In addition, ‘only a small proportion of the world flora has been examined for pharmacologically active compounds, but with the ever-increasing danger of plants becoming extinct, there is a real risk that many important plant sources may be lost’.<sup>9</sup>

Modern research has largely confirmed the traditionally held beliefs regarding the therapeutic uses of particular plants, although with time the terminology has changed. A herb such as basil, at one time described as a ‘protection against evil’, or ‘good for the heart’ whose scent ‘taketh away sorrowfulness’, may in modern usage be described as an excellent prophylactic, nerve tonic and antidepressant. Like herbal remedies, an essential oil can cover a wide field of activities; indeed the same herb or oil (such as lemon balm) can stimulate certain systems of the body while sedating or relaxing others. In order to gain a clearer understanding of the way essential oils work, and some of their particular areas of activity, it may be helpful to take an overall view of the systems of the human body.

#### **The Skin**

Skin problems are often the surface manifestation of a deeper condition, such as a build-up of toxins in the blood, hormonal imbalance or nervous and emotional difficulties. In this area the versatility of essential oils is particularly valuable because they are able to combat such complaints on a variety of levels. Since essential oils are soluble in oil and alcohol and impart their scent to water, they provide the ideal ingredient for cosmetics and general skin care as well as for the treatment of specific diseases.

Within this context the following activities are of particular benefit:

*Antiseptics* for cuts, insect bites, spots, etc; for example, thyme, sage, eucalyptus, tea tree, clove, lavender and lemon.

*Anti-inflammatory oils* for eczema, infected wounds, bumps, bruises, etc; for example, German and Roman chamomile, lavender and yarrow.

*Fungicidal oils* for athlete's foot, candida, ringworm, etc; for example, lavender, tea tree, myrrh, patchouli and sweet marjoram.

*Granulation stimulating or cicatrising(healing) agents* for burns, cuts, scars, stretch marks, etc; for example, lavender, chamomile, rose, neroli, frankincense and geranium.

*Deodorants* for excessive perspiration, cleaning wounds, etc; for example, bergamot, lavender, thyme, juniper, cypress, Spanish sage, lemongrass.

*Insect repellents and parasiticides* for lice, fleas, scabies, ticks, mosquitos, ants, moths, etc; for example, spike lavender, garlic, geranium, citronella, eucalyptus, clove, camphor, Atlas cedarwood.

#### **The Circulation, Muscles and Joints**

Essential oils are easily absorbed via the skin and mucosa into the bloodstream, affecting the nature of the circulation as a whole. Oils with a rubefacient or warming effect not only cause a better local blood circulation, but also influence the inner organs. They bring a warmth and glow to the surface of the skin and can provide considerable pain relief through their analgesic or numbing effect. Such oils can relieve local inflammation by setting free mediators in the body which in turn cause the blood vessels to expand, so the blood is able to move more quickly and the swelling is reduced. Some oils like hyssop tend to have a balancing or regulating effect on the circulatory system as a whole, reducing

the blood pressure if it is too high or stimulating the system if it is sluggish.

*Hypotensives* for high blood pressure, palpitations, stress, etc; for example, sweet marjoram, ylang ylang, lavender, lemon.

*Hypertensives* for poor circulation, chilblains, listlessness, etc; for example, rosemary, spike lavender, eucalyptus, peppermint, thyme.

*Rubefacients* for rheumatism of the joints, muscular stiffness, sciatica, lumbago, etc; for example, black pepper, juniper, rosemary, camphor, sweet marjoram.

*Depurative or antitoxic agents* for arthritis, gout, congestion, skin eruptions, etc; for example, juniper, lemon, fennel, lovage.

*Lymphatic stimulants* for cellulitis, obesity, water retention, etc; for example, grapefruit, lime, fennel, lemon, mandarin, white birch.

*Circulatory tonics and astringents* for swellings, inflammations, varicose veins, etc; for example, cypress, yarrow, lemon.

## **The Respiratory System**

Nose, throat and lung infections are conditions which respond very well to treatment with essential oils. Inhalation is a very effective way of utilizing their properties, for 'although after arriving in the bronchi the main part will be exhaled directly by the lungs, they cause an increased bronchial secretion (a protective reaction) which is beneficial for many respiratory ailments'.<sup>10</sup> By inhalation they are absorbed into the blood circulation even faster than by oral application. In addition, most essential oils which are absorbed from the stomach are then excreted via the lungs, only a small part in the urine.

*Expectorants* for catarrh, sinusitis, coughs, bronchitis, etc; for example, eucalyptus, pine, thyme, myrrh, sandalwood, fennel.

*Antispasmodics* for colic, asthma, dry cough, whooping cough, etc; for example, hyssop, cypress, Atlas cedarwood, bergamot, chamomile, cajeput.

*Balsamic agents* for colds, chills, congestion, etc; for example, benzoin, frankincense, Tolu balsam, Peru balsam, myrrh.

*Antiseptics* for 'flu, colds, sore throat, tonsillitis, gingivitis, etc; for example, thyme, sage, eucalyptus, hyssop, pine, cajeput, tea tree, borneol.

## **The Digestive System**

Although it is not recommended that essential oils be taken orally, they can by external application effect certain changes in the digestive processes. However, whereas herbal medicine has many remedies at its disposal for a wide variety of stomach, gall bladder and liver complaints, such as dandelion, marshmallow, chamomile and meadowsweet, much of their effectiveness is based on a combination of aromatic components, together with bitters, tannins and mucilage, which are absent in the volatile oil alone. The external application of essential oils in problems of the digestive system though effective, is consequently somewhat limited compared to the internal use of herbal remedies.

*Antispasmodics* for spasm, pain, indigestion, etc; for example, chamomile, caraway, fennel, orange, peppermint, lemon balm, aniseed, cinnamon.

*Carminatives and stomachics* for flatulent dyspepsia, aerophagia, nausea, etc; for example, angelica, basil, fennel, chamomile, peppermint, mandarin.

*Cholagogues* for increasing the flow of bile and stimulating the gall bladder; for example, caraway, lavender, peppermint and borneol.

*Hepatics* for liver congestion, jaundice, etc; for example, lemon, lime, rosemary, peppermint.

*Aperitifs* for loss of appetite, anorexia, etc; for example, aniseed, angelica, orange, ginger, garlic.

## The Genito-urinary and Endocrine Systems

Like the digestive system, the reproductive organs can be affected by absorption via the skin into the bloodstream, as well as through hormonal changes. Some essential oils such as rose and jasmine have an affinity for the reproductive system having a general strengthening effect as well as helping to combat specific complaints like menstrual problems, genital infections and sexual difficulties. Other oils contain plant hormones which mimic the corresponding human hormones; oils such as hops, sage and fennel have been found to contain a form of oestrogen that influences the menstrual cycle, lactation and secondary sexual characteristics. Oestrogen also helps maintain a healthy circulation, good muscle and skin tone and strong bones in both men and women.

Other essential oils are known to influence the levels of hormone secretion of other glands, including the thyroid gland (which governs growth and metabolism), the adrenal medulla (which deals with stress reactions) and the adrenal cortex (which governs several processes including the production of oestrogen and androgen, the male sex hormone).

*Antispasmodics* for menstrual cramp (dysmenorrhoea), labour pains, etc; for example, sweet marjoram, chamomile, clary sage, jasmine, lavender.

*Emmenagogues* for scanty periods, lack of periods (amenorrhoea), etc; for example, chamomile, fennel, hyssop, juniper, sweet marjoram, peppermint.

*Uterine tonics and regulators* for pregnancy, excess menstruation (menorrhagia), PMT, etc; for example, clary sage, jasmine, rose, myrrh, frankincense, lemon balm.

*Antiseptic and bactericidal agents* for leucorrhoea, vaginal pruritis, thrush, etc; for example, bergamot, chamomile, myrrh, rose, tea tree.

*Galactagogues* for increasing milk flow; for example, fennel, jasmine, anise, lemongrass (sage, mint and parsley reduce it).

*Aphrodisiacs* for impotence and frigidity, etc; for example, black pepper, cardomon, clary sage, neroli, jasmine, rose, sandalwood, patchouli, ylang ylang.

*Anaphrodisiacs* for reducing sexual desire; for example, sweet marjoram, camphor.

*Adrenal stimulants* for anxiety, stress-related conditions, etc; for example, basil, geranium, rosemary, borneol, sage, pine, savory.

With regard to the kidneys, bladder and urinary system in general, it is difficult to bring about results simply by using essential oils. According to recent research, 'the diuretic effects of essential oils are virtually non-existent'.<sup>12</sup> In addition, the traditional diuretic agents such as juniper, lovage and parsley seed are considered unsuitable as essential oils for internal use due to toxicity levels and possible kidney damage; herb teas of fennel, dandelion or chamomile provide a milder alternative. Bathing and using a douche can help control urinary infections, especially when they are associated with nervous or stress-related symptoms.

*Urinary antiseptics* for cystitis, urethritis, etc; for example, bergamot, chamomile, tea tree, sandalwood.

## The Immune System

Virtually all essential oils have bactericidal properties and by promoting the production of white blood cells, they can help prevent and treat infectious illness. It is these properties that gave aromatic herbs and oils such high repute with regard to infections such as malaria and typhoid in the tropics and epidemics of plague in the Middle Ages. 'People who use essential oils all the time ... mostly have a high level of resistance to illness, catching fewer colds, etc, than average and recovering quickly if they do.'<sup>11</sup>

*Bactericidal and antiviral agents (prophylactics)* for protection against colds, 'flu, etc; for example, tea tree, cajeput, niaouli, basil, lavender, eucalyptus, bergamot, camphor, clove, rosemary.

*Febrifuge agents* for reducing fever and temperature, etc; for example, angelica, basil, peppermint, thyme, sage, lemon, eucalyptus, tea tree.

*Sudorifics and diaphoretics* for promoting sweating, eliminating toxins, etc; for example, rosemary, thyme, hyssop, chamomile.

## The Nervous System

Recent research shows that the properties of many oils correspond to the traditionally held views: chamomile, bergamot, sandalwood, lavender and sweet marjoram were found to have a sedative effect on the central nervous system; jasmine, peppermint, basil, clove and ylang ylang were found to have a stimulating effect. Neroli was found to be stimulating and lemon to be sedating, contrary to popular belief. Some oils are known to be 'adaptogens', that is, they have a balancing or normalizing effect on the systems of the body: geranium and rosewood were either sedative or stimulating according to each situation and individual.

Words like 'relaxing' and 'uplifting' often have more to do with odour description and emotional response rather than physiological effect – although the two are related. Consequently, oils such as bergamot, lemon balm or lemon can be sedating to the nervous system, but reviving to the 'spirit'. Conversely, oils such as jasmine, ylang ylang and neroli can be nerve stimulants yet soothing and relaxing on a more subtle emotional level.

*Sedatives* for nervous tension, stress, insomnia, etc; for example, chamomile, bergamot, sandalwood, lavender, sweet marjoram, lemon balm, hops, valerian, lemon.

*Stimulants* for convalescence, lack of strength, nervous fatigue, etc; for example, basil, jasmine, peppermint, ylang ylang, neroli, angelica, rosemary.

*Nerve tonics (nervines)* for strengthening the nervous system as a whole; for example, chamomile, clary sage, juniper, lavender, marjoram, rosemary.

## The Mind

This area is perhaps the most discussed and least understood area of activity regarding essential oils. There is no doubt that throughout history aromatic oils have been used for their power to influence the emotions and states of mind: this is the basis for their employment as incense for religious and ritualistic purposes. It is already known that two olfactory nerve tracts run right into the limbic system (the part of the brain concerned with memory and emotion), which means that scents can evoke an immediate and powerful response which defies rational analysis.

Recent research at Warwick University, England, and Toho University, Japan, has aimed to put these traditionally held beliefs and applications into a scientific context. They came up with two types of reaction to odours which they called a 'hard-wired' response or a 'soft-wired' response: the first type is ingrained from before birth and is purely instinctual; the second is learned or acquired later on. The first type may be, for example, the scent of the mother's skin or a sexual signal; the second might be the fragrance of honeysuckle, reminiscent of a childhood garden.

But to what extent is the effect of a particular oil dependent upon its chemical or physiological make-up, and to what extent does it rely upon a belief or an association? In dealing with the psychological or emotional responses to the scent of a particular oil, this kind of classification becomes much more difficult: surely here it is more appropriate to consider the temperament of each individual within a given context, rather than predict a set reaction.

At the Psychology of Perfumery Conference 1991, it was generally agreed that 'while pharmacological effects may be very similar from one person to another, psychological effects are bound to be different.'<sup>13</sup> The effect of an odour on a human being was dependent on a variety of factors which include:

1. how the odour was applied,
2. how much was applied,
3. the circumstances in which it was applied,
4. the person to whom it was applied (age, sex, personality type),

5. what mood they were in to start with,
6. what previous associations they may have with the odour,
7. anosmia, or inability to smell (certain scents).

We must, therefore, seek odoriferous substances which present affinities with the human being we intend to treat, those which will compensate for his deficiencies and those which will make his faculties blossom. It was by searching for this remedy that we encountered the *individual prescription* (IP), which on all points represents the identity of the individual.<sup>14</sup>

When we begin to consider individual needs, essential oils start to demonstrate the versatility of their nature. The rose is a good example; a flower which has been associated with beauty, love, and spiritual depth in folklore and religious texts (especially Sufi) but which also has a long tradition of usage for physical conditions such as skin problems, regulating the female cycle, promoting the circulation, purifying the blood and as a heart tonic. When we smell the fragrance of the rose, it carries all these rich associations with it, affecting our mind and body simultaneously, where the effect is moulded by personal experience.

‘The general trend of modern thought is strictly dualistic; psychic and somatic happenings are treated as mutually exclusive rather than inclusive.’<sup>15</sup> Trying to disentangle spirit from matter leads nowhere; as David Hoffman says, ‘Mind and Matter are mutually enfolded projections of a higher reality which is neither matter nor consciousness.’<sup>16</sup>

## PART II: THE OILS

## A

### **AJOWAN**

*Trachyspermum copticum*

FAMILY Apiaceae (Umbelliferae)

SYNONYMS *T. ammi*, *Ammi copticum*, *Carum ajowan*, *C. copticum*, *Ptychotis ajowan*, ajuan, omum.

GENERAL DESCRIPTION An annual herb with a greyish-brown seed, which resembles parsley in appearance.

DISTRIBUTION Chiefly India, also Afghanistan, Egypt, the West Indies and the Seychelle Islands.

OTHER SPECIES See Botanical Classification section.

HERBAL/FOLK TRADITION The seeds are used extensively in curry powders and as a general household remedy for intestinal problems. The tincture, essential oil and 'thymol' are used in Indian medicine, particularly for cholera.

ACTIONS Powerful antiseptic and germicide, carminative.

EXTRACTION Essential oil by steam distillation from the seed.

CHARACTERISTICS A yellow-orange or reddish liquid with a herbaceous-spicy medicinal odour, much like thyme.

PRINCIPAL CONSTITUENTS Thymol, pinene, cymene, dipentene, terpinene and carvacrol, among others.

SAFETY DATA Possible mucous membrane and dermal irritant. Due to high thymol level, should be avoided in pregnancy. Toxicity levels are unknown.

AROMATHERAPY/HOME USE Not recommended.

OTHER USES It has been used extensively for the isolation of thymol, but this has largely been replaced by synthetic thymol.

### **ALLSPICE**

*Pimenta dioica*

FAMILY Myrtaceae

SYNONYMS *P. officinalis*, pimento, pimenta, Jamaica pepper.

GENERAL DESCRIPTION An evergreen tree which reaches about 10 metres high and begins to produce fruit in its third year. Each fruit contains two kidney-shaped green seeds which turn glossy black upon ripening.

DISTRIBUTION Indigenous to the West Indies and South America, it is cultivated extensively in Jamaica, Cuba and, to a lesser degree, in Central America. Imported berries are distilled in Europe and

America.

**OTHER SPECIES** Four other varieties of pimento are found in Venezuela, Guyana and the West Indies which are used locally as spices.

**HERBAL/FOLK TRADITION** Used for flatulent indigestion and externally for neuralgic or rheumatic pain. Pimento water is used as a vehicle for medicines which ease dyspepsia and constipation since it helps prevent griping pains. It is used extensively as a domestic spice – allspice is so called because it tastes like a combination of cloves, juniper berries, cinnamon and pepper.

**ACTIONS** Anaesthetic, analgesic, anti-oxidant, antiseptic, carminative, muscle relaxant, rubefacient, stimulant, tonic.

**EXTRACTION** Essential oil by steam distillation from 1. the leaves, and 2. the fruit. The green unripe berries contain more oil than the ripe berries, but the largest percentage of oil is contained in the shell of the fruit. An oleoresin from the berries is also produced in small quantities.

**CHARACTERISTICS** 1. Pimenta leaf oil is a yellowish-red or brownish liquid with a powerful sweet-spicy scent, similar to cloves. 2. Pimenta berry oil is a pale yellow liquid with a sweet warm balsamic-spicy bodynote (middle note) and fresh, clean top note. It blends well with ginger, geranium, lavender, popanax, labdanum, ylang ylang, patchouli, neroli, oriental and spicy bases.

**PRINCIPAL CONSTITUENTS** Mainly eugenol, less in the fruit (60–80 per cent) than in the leaves (up to 96 per cent), also methyl eugenol, cineol, phellandrene and caryophyllene among others.

**SAFETY DATA** Eugenol irritates the mucous membranes, and has been found to cause dermal irritation. Pimenta leaf and berry oil should therefore be used with care in low dilutions only.

**AROMATHERAPY/HOME USE CIRCULATION, MUSCLES AND JOINTS:** Arthritis, fatigue, muscle cramp, rheumatism, stiffness etc.

‘Used in tiny amounts ... in a massage oil for chest infections, for severe muscle spasm to restore mobility quickly, or where extreme cold is experienced.’<sup>1</sup>

**RESPIRATORY SYSTEM:** Chills, congested coughs, bronchitis.

**DIGESTIVE SYSTEM:** Cramp, flatulence, indigestion, nausea.

**NERVOUS SYSTEM:** Depression, nervous exhaustion, neuralgia, tension and stress.

**OTHER USES** Used in aromatic carminative medicines; as a fragrance component in cosmetics and perfumes, especially soaps, aftershaves, spicy and oriental fragrances. Both leaf and berry oil are used extensively for flavouring foods, especially savoury and frozen foods, as well as alcoholic and soft drinks.

## **ALMOND, BITTER**

*Prunus dulcis var. amara*

**FAMILY** Rosaceae

**SYNONYMS** *P. amygdalus var. amara*, *Amygdalus communis var. amara*, *A. dulcis*, *P. communis*.

**GENERAL DESCRIPTION** The almond tree grows to a height of about 7 metres and is popular as a garden tree due to its pinky-white blossom. It is botanically classified as a drupe.



**DISTRIBUTION** Native to Western Asia and North Africa, it is now extensively cultivated throughout the Mediterranean region, Israel and California.

**OTHER SPECIES** There are two main types of almond tree – bitter and sweet. The sweet almond does not produce any essential oil.

**HERBAL/FOLK TRADITION** A ‘fixed’ oil commonly known as ‘sweet almond oil’ is made by pressing the kernels from both the sweet and bitter almond trees. Unlike the essential oil, this fixed oil does not contain any benzaldehyde or prussic acid, and has many medical and cosmetic uses. It is used as a laxative, for bronchitis, coughs, heartburn and for disorders of the kidneys, bladder and biliary ducts. It helps relieve muscular aches and pains, softens the skin and promotes a clear complexion.

**ACTIONS** Anaesthetic, antispasmodic, narcotic, vermifuge (FFPA).

**EXTRACTION** Essential oil by steam distillation from the kernels. The nuts are first pressed and macerated in warm water for 12 to 24 hours before the oil is extracted. It is during this process that the prussic acid is formed; it is not present in the raw seed. Most commercial bitter almond oil is rectified to remove all prussic acid, i.e. free from prussic acid (FFPA).

**CHARACTERISTICS** Light colourless liquid with a characteristic ‘marzipan’ scent (FFPA).

**PRINCIPAL CONSTITUENTS** Benzaldehyde (95 per cent), prussic acid (3 per cent).

**SAFETY DATA** Prussic acid, also known as hydrocyanic acid or cyanide, is a well-known poison. Benzaldehyde is also moderately toxic.

**AROMATHERAPY/HOME USE** None. ‘Should not be used in therapy either internally or externally.’<sup>2</sup>

**OTHER USES** Bitter almond oil is no longer used for internal medication. Rectified bitter almond oil is used for flavouring foods, mainly confectionery; the most common uses are ‘almond essence’ and marzipan. The oil (FFPA) is increasingly being replaced by synthetic benzaldehyde in food flavourings.

## **AMBRETTE SEED**

*Abelmoschus moschatus*

**FAMILY** Malvaceae

**SYNONYMS** *Hibiscus abelmoschus*, musk seed, Egyptian alcee, target-leaved hibiscus, muskmallow.

**GENERAL DESCRIPTION** An evergreen shrub about 1.5 metres high, bearing large single yellow flowers with a purple centre. The capsules, in the form of five-cornered pyramids, contain the greyish-brown kidney-shaped seeds which have a musky odour.

**DISTRIBUTION** Indigenous to India; widely cultivated in tropical countries including Indonesia, Africa, Egypt, China, Madagascar, and the West Indies. Distillation of the oil is generally carried out in Europe and America.

**OTHER SPECIES** A variety, *H. esculentus*, is grown largely in Istanbul as a demulcent. Another variety is also found in Martinique, the seeds of which have a more delicate scent.

**HERBAL/FOLK TRADITION** Generally used as a stimulant and to ease indigestion, cramp and nervous dyspepsia. In Chinese medicine it is used to treat headache; in Egypt the seeds are used to sweeten the breath and are made into an emulsion with milk to be used for itch. The Arabs use the seeds to mix with coffee. Widely used as a domestic spice in the East.

**ACTIONS** Antispasmodic, aphrodisiac, carminative, nervine, stimulant, stomachic.

**EXTRACTION** Essential oil by steam distillation of the seeds. Liquid ambrette seed oil should be allowed to age for several months before it is used. A concrete and absolute are also produced by solvent extraction.

**CHARACTERISTICS** A pale yellowy-red liquid with a rich, sweet floral-musky odour, very tenacious. It blends well with rose, neroli, sandalwood, clary sage, cypress, patchouli, oriental and 'sophisticated' bases.

**PRINCIPAL CONSTITUENTS** Ambrettolide, ambrettolic acid, palmitic acid and farnesol.

**SAFETY DATA** Available information indicates the oil to be non-toxic, non-irritant and non-sensitizing.

#### **AROMATHERAPY/HOME USE**

**CIRCULATION, MUSCLES AND JOINTS:** Cramp, fatigue, muscular aches and pains, poor circulation.

**NERVOUS SYSTEM:** Anxiety, depression, nervous tension and stress-related conditions.

**OTHER USES** Employed by the cosmetic and perfumery industries in oriental-type scents and for the adulteration of musk; also used as a musk substitute. Used for flavouring alcoholic and soft drinks as well as some foodstuffs, especially confectionery.

## **AMYRIS**

*Amyris balsamifera*

**FAMILY** Rutaceae

**SYNONYMS** *Schimmelia oleifera*, West Indian sandalwood, West Indian rosewood.

**GENERAL DESCRIPTION** A small bushy tree with compound leaves and white flowers which grows wild in thickets all over the island of Haiti.

**DISTRIBUTION** Mainly Haiti, it has now been introduced to tropical zones all over the world, e.g. Jamaica, South and Central America.

**OTHER SPECIES** Not to be confused with East Indian or Mysore sandalwood (*Santalum album*), to which it bears no relation.

**HERBAL/FOLK TRADITION** The locals call it 'candle wood' because of its high oil content; it burns like a candle. It is used as a torch by fishermen and traders. It also makes excellent furniture wood.

**ACTIONS** Antiseptic, balsamic, sedative.

**EXTRACTION** Essential oil by steam distillation from the broken-up wood and branches. Best if the wood is seasoned first. It provides a very plentiful yield.

**CHARACTERISTICS** A pale yellow, slightly viscous liquid with a musty, faintly woody scent, quickly fading away. It blends well with lavandin, citronella, oakmoss, sassafras, cedarwood and other wood oils.

**PRINCIPAL CONSTITUENTS** Caryophyllene, cadinene and cadinol.

**SAFETY DATA** Generally non-irritant; no other information available at present.

**AROMATHERAPY/HOME USE** Perfume.

**OTHER USES** As a cheap substitute for East Indian sandalwood in perfumes and cosmetics, although it does not have the same rich tenacity; chiefly employed as a fixative in soaps. Limited application in flavouring work, especially liqueurs.

## **ANGELICA**

*Angelica archangelica*

**FAMILY** Apiaceae (Umbelliferae)

**SYNONYMS** *A. officinalis*, European angelica, garden angelica.

**GENERAL DESCRIPTION** A large hairy plant with ferny leaves and umbels of white flowers. It has a strong aromatic scent and a large rhizome.

**DISTRIBUTION** Native to Europe and Siberia, cultivated mainly in Belgium, Hungary and Germany.

**OTHER SPECIES** There are over thirty different types of angelica but this is the most commonly used medicinally. See Botanical Classification section.

**HERBAL/FOLK TRADITION** This herb has been praised for its virtues since antiquity. It strengthens the heart, stimulates the circulation and the immune system in general. It has been used for centuries in Europe for bronchial ailments, colds, coughs, indigestion, wind and to stimulate the appetite. As a urinary antiseptic it is helpful in cystitis and is also used for rheumatic inflammation. The Chinese employ at least ten kinds of angelica, well known for promoting fertility, fortifying the spirit and for treating female disorders generally; it has a reputation second only to ginseng. It is current in the British Herbal Pharmacopoeia as a specific for bronchitis associated with vascular deficiency. Candied Angelica stalks are popular in France and Spain.

**ACTIONS** Antispasmodic, carminative, depurative, diaphoretic, digestive, diuretic, emmenagogue, expectorant, febrifuge, nervine, stimulant, stomachic, tonic. Reported to have bactericidal and fungicidal properties.

**EXTRACTION** Essential oil produced by steam distillation from the 1. roots and rhizomes, and, 2. fruit or seed. An absolute is also produced on a small scale, from the roots.

**CHARACTERISTICS** 1. A colourless or pale yellow oil which turns yellowy-brown with age, with a rich herbaceous-earthy bodynote. 2. The seed oil is a colourless liquid with a fresher, spicy top note. It blends well with patchouli, opopanax, costus, clary sage, oakmoss, vetiver and with citrus oils.

**PRINCIPAL CONSTITUENTS** Root and seed oil contain phellandrene, pinene, limonene, linalol and borneol; rich in coumarins including osthol, angelicin, bergapten and imperatorin; also contains plant acids.

**SAFETY DATA** Both root and seed oil are non-toxic and non-irritant. The root oil (not the seed oil) is phototoxic, probably due to higher levels of bergapten. Not to be used during pregnancy or by diabetics.

#### AROMATHERAPY/HOME USE

**SKIN CARE:** Dull and congested skin, irritated conditions, psoriasis.

**CIRCULATION MUSCLES AND JOINTS:** Accumulation of toxins, arthritis, gout, rheumatism, water retention.

**RESPIRATORY SYSTEM:** Bronchitis, coughs.

**DIGESTIVE SYSTEM:** Anaemia, anorexia, flatulence, indigestion.

**NERVOUS SYSTEM:** Fatigue, migraine, nervous tension and stress-related disorders.

**IMMUNE SYSTEM:** Colds.

**OTHER USES** Highly valued as a fragrance component in soaps, lotions and perfumes especially colognes, oriental and heavy chypres fragrances. It is employed in some cosmetics for its soothing effect on skin complaints. Used extensively as a flavouring agent in most food categories, and in alcoholic and soft drinks, especially liqueurs.

## **ANISE, STAR**

*Illicium verum*

**FAMILY** Illiciaceae

**SYNONYMS** Chinese anise, illicium, Chinese star anise.

**GENERAL DESCRIPTION** Evergreen tree up to 12 metres high with a tall, slender white trunk. It bears fruit which consist of five to thirteen seed-bearing follicles attached to a central axis in the shape of a star.

**DISTRIBUTION** Native to south east China, also Vietnam, India and Japan. Mainly produced in China.

**OTHER SPECIES** Several other related species, e.g. Japanese star anise which is highly poisonous!

**HERBAL/FOLK TRADITION** Used in Chinese medicine for over 1300 years for its stimulating effect on the digestive system and for respiratory disorders such as bronchitis and unproductive coughs. In the East generally, it is used as a remedy for colic and rheumatism, and often chewed after meals to sweeten the breath and promote digestion. A common oriental domestic spice.

**ACTIONS** Antiseptic, carminative, expectorant, insect repellent, stimulant.

**EXTRACTION** Essential oil by steam distillation from the fruits, fresh or partially dried. An oil is also produced from the leaves in small quantities.

**CHARACTERISTICS** A pale yellow liquid with a warm, spicy, extremely sweet, liquorice-like scent. It blends well with rose, lavender, orange, pine and other spice oils, and has excellent masking properties.

**PRINCIPAL CONSTITUENTS** Trans-anethole (80–90 per cent).

**SAFETY DATA** Despite the anethole content, it does not appear to be a dermal irritant, unlike aniseed. In large doses it is narcotic and slows down the circulation; it can lead to cerebral disorders. Use in

moderation only.

#### AROMATHERAPY/HOME USE

CIRCULATION, MUSCLES AND JOINTS: Muscular aches and pains, rheumatism.

RESPIRATORY SYSTEM: Bronchitis, coughs.

DIGESTIVE SYSTEM: Colic, cramp, flatulence, indigestion.

IMMUNE SYSTEM: Colds.

OTHER USES By the pharmaceutical industry in cough mixtures, lozenges, etc. and to mask undesirable odours and flavours in drugs. As a fragrance component in soaps, toothpaste and detergents as well as cosmetics and perfumes. Widely used for flavouring food, especially confectionery, alcoholic and soft drinks.

## ANISEED

*Pimpinella anisum*

FAMILY Apiaceae (Umbelliferae)

SYNONYMS *Anisum officinalis*, *A. vulgare*, anise, sweet cumin.

GENERAL DESCRIPTION An annual herb, less than a metre high, with delicate leaves and white flowers.

DISTRIBUTION Native to Greece and Egypt, now widely cultivated mainly in India and China and to a lesser extent in Mexico and Spain.

OTHER SPECIES There are several different chemotypes of aniseed according to the country of origin. Not to be confused with star anise, which belongs to a different family altogether.

HERBAL/FOLK TRADITION Widely used as a domestic spice. The volatile oil content provides the basis for its medicinal applications: dry irritable coughs, bronchitis and whooping cough. The seed can be used in smoking mixtures. Aniseed tea is used for infant catarrh, also flatulence, colic and griping pains, also for painful periods and to promote breast milk. In Turkey a popular alcoholic drink, *raki*, is made from the seed.

ACTIONS Antiseptic, antispasmodic, carminative, diuretic, expectorant, galactagogue, stimulant, stomachic.

EXTRACTION Essential oil by steam distillation from the seeds.

CHARACTERISTICS Colourless to pale yellow liquid with a warm, spicy-sweet characteristic scent. Like star anise, it is a good masking agent.

PRINCIPAL CONSTITUENTS Trans-anethole (75–90 per cent).

SAFETY DATA Its major component, anethole, is known to cause dermatitis in some individuals – avoid in allergic and inflammatory skin conditions. In large doses it is narcotic and slows down the circulation; can lead to cerebral disorders. Use in moderation only.

AROMATHERAPY/HOME USE *See star anise.*

OTHER USES By the pharmaceutical industry in cough mixtures and lozenges and to mask undesirable flavours in drugs. Also used in dentifrices and as a fragrance component in soaps,

toothpaste, detergents, cosmetics and perfumes, mostly of the industrial type. Employed in all major food categories.

## **ARNICA**

*Arnica montana*

FAMILY Asteraceae (Compositae)

SYNONYMS *A. fulgens*, *A. sororia*, leopard's bane, wolf's bane.

GENERAL DESCRIPTION A perennial alpine herb with a creeping underground stem, giving rise to a rosette of pale oval leaves. The flowering erect stem is up to 60 cms high, bearing a single, bright yellow, daisy-like flower. The whole plant is very difficult to cultivate.

DISTRIBUTION Native to northern and central Europe; also found growing wild in the USSR, Scandinavia and northern India. The oil is produced mainly in France, Belgium and Germany.

OTHER SPECIES A related plant, *A. cordifolia*, and other species of arnica are used in America, where it is known as 'mountain tobacco'.

HERBAL/FOLK TRADITION This herb stimulates the peripheral blood supply when applied externally, and is considered one of the best remedies for bruises and sprains. It helps relieve rheumatic pain and other painful or inflammatory skin conditions, so long as the skin is not broken! It is never used internally due to toxicity levels.

ACTIONS Anti-inflammatory, stimulant, vulnerary.

EXTRACTION Essential oil by steam distillation of 1. flowers, and 2. root. The yield of essential oil is very small. An absolute, tincture and resinoid are also produced.

CHARACTERISTICS 1. A yellowy-orange liquid with a greenish-blue hint and a strong bitter-spicy scent reminiscent of radish. 2. Dark yellow or butter-brown oil more viscous than the flower oil, with a strong bitter scent.

PRINCIPAL CONSTITUENTS Thymohydroquinone dimethyl ether (80 per cent approx.), isobutyric ester of phlorol (20 per cent approx.) and other minor traces.

SAFETY DATA The essential oil is highly toxic and should never be used internally or on broken skin. However, the tincture or arnica ointment are valuable additions to the home medicine cabinet.

AROMATHERAPY/HOME USE None.

OTHER USES The tincture is mainly employed in pharmaceutical skin products. The oil from the flowers finds occasional use in herbaceous-type perfumes. It is also used to flavour certain liqueurs.

## **ASAFETIDA**

*Ferula asa-foetida*

FAMILY Apiaceae (Umbelliferae)

SYNONYMS Asafoetida, gum asafetida, devil's dung, food of the gods, giant fennel.

**GENERAL DESCRIPTION** A large branching perennial herb up to 3 metres high, with a thick fleshy root system and pale yellow-green flowers.

**DISTRIBUTION** Native to Afghanistan, Iran and other regions of south west Asia.

**OTHER SPECIES** There are several other species of *Ferula* which yield the oleoresin known as 'asafetida', e.g. Tibetan asafetida, which is also used to a lesser extent in commerce.

**HERBAL/FOLK TRADITION** In Chinese medicine it has been used since the seventh century as a nerve stimulant in treating neurasthenia. It is also widely used in traditional Indian medicine, where it is believed to stimulate the brain. In general, it has the reputation for treating various ailments including asthma, bronchitis, convulsions, coughs, constipation, flatulence and hysteria. The foliage of the plant is used as a local vegetable. It is current in the British Herbal Pharmacopoeia as a specific for intestinal flatulent colic.

**ACTIONS** Antispasmodic, carminative, expectorant, hypotensive, stimulant. Animals are repelled by its odour.

**EXTRACTION** The oleoresin is obtained by making incisions into the root and above-ground parts of the plant. The milky juice is left to leak out and harden into dark reddish lumps, before being scraped off and collected. The essential oil is then obtained from the resin by steam distillation. An absolute, resinoid and tincture are also produced.

**CHARACTERISTICS** A yellowy-orange oil with a bitter acrid taste and a strong, tenacious odour resembling garlic. However, beneath this odour there is a sweet, balsamic note.

**PRINCIPAL CONSTITUENTS** Disulphides, notably 2-butyl propenyl disulphide with monoterpenes, free ferulic acid, valeric, traces of vanillin, among others.

**SAFETY DATA** Available information indicates the oil to be relatively non-toxic and non-irritant. However, it has the reputation for being the most adulterated 'drug' on the market. Before being sold, the oleoresin is often mixed with red clay or similar substitutes.

#### **AROMATHERAPY/HOME USE**

**RESPIRATORY SYSTEM:** 'There is evidence that the volatile oil is expelled through the lungs, therefore it is excellent for asthma, bronchitis, whooping cough etc.'<sup>3</sup>

**NERVOUS SYSTEM:** Fatigue, nervous exhaustion and stress-related conditions.

**OTHER USES** Now rarely used in pharmaceutical preparations; formerly used as a local stimulant for the mucous membranes. Occasionally used as a fixative and fragrance component in perfumes, especially rose bases and heavy oriental types. Employed in a wide variety of food categories, mainly condiments and sauces.