

IENICA

Essential Oils

~ Market Information Sheet ~



CONTENTS

Garden Angelica - *Angelica archangelica* L.

Caraway - *Carum carvi* L.

Coriander - *Coriandrum sativum* L.

Sweet Basil - *Ocimum basilicum* L.

Damask Rose - *Rosa damascena* Mill.

Garden Sage - *Salvia officinalis* L.

Clary Sage - *Salvia sclarea* L.

Garden Thyme - *Thymus vulgaris* L.

Lemon Balm - *Melissa officinalis* L.

Lavender - *Lavandula angustifolia* Mill.,

Lavandula hybrida R.

Milfoil - *Achillea millefolium* L.

Common Fennel - *Foeniculum vulgare* Mill.

Peppermint - *Mentha piperita* L., *Mentha crispa* L.

This market information booklet has been compiled primarily by the IENICA partners for Romania and Belgium – at the National Institute for Chemical Pharmaceutical Research and Development in Bucharest, Romania, and the University of Gembloux, Belgium.

We are grateful for this work and also for the input from all other IENICA partners and members of IENICA's Industry Advisory Group.

INTRODUCTION

This market information booklet is one of several that have been written as part of the current IENICA workstream of the IENICA-INFORM project.

These booklets are the first to try to characterise the specifications that a farm feedstock must achieve to be acceptable in the non-food products sector. The lack of specifications has been highlighted as a bottleneck in development of such products. Whilst it has been quite difficult to produce these booklets and there is no doubt they will be superseded in time, they will certainly form the first step in assisting growers match market requirements with their agricultural feedstocks.

This particular information sheet is a brief summary and introduction to IENICA's Essential Oils Market Information Booklet – a much more extensive document (see www.ienica.net)

Melvyn F. Asken

Head of Agricultural and Rural Strategy, Central Science Laboratory, UK

Co-ordinator of the IENICA-INFORM project

Garden Angelica

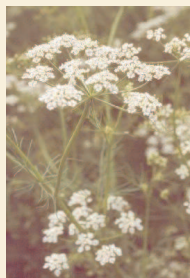
Angelica archangelica L.



Angelica is a herbaceous, aromatic herb native to Eurasia and commercially cultivated in Belgium, Holland, France, Germany, Hungary, India, the United States and Canada. The estimated world production of angelica oil is £330,000. Besides the medical uses, angelica root is the main flavouring ingredient of gin. It is widely used in liqueurs like Benedictine, Chartreuse, Cointreau and Vermouth. The essential oil content is 0.3-1% and α -pinene and β -phellandrene are the major constituents.

Caraway

Carum carvi L.



Caraway is a slender annual or biennial herb native to the Mediterranean regions of Europe, Asia and North Africa and cultivated in Europe, Morocco, Iran, India and Russia. World production of caraway seed oil is estimated at about 10 metric tonnes down from about 40 metric tonnes in the 1950's. Major producing countries are Holland, Poland and Egypt. Caraway fruit contains 2.70-6.50% essential oil on a dry weight basis, with carvone being the main constituent (50-60%). The oils of caraway grown in different locations differ from each other in quantity, quality and composition.

Coriander

Coriandrum sativum L.



Coriander is an annual herb native to Eastern Mediterranean sea regions and cultivated in many countries in Europe, America, Asia and Africa. The world production of coriander oil is estimated at £6,000,000. The main sources of commercially available coriander fruits and oils are ex-USSR, ex-Yugoslavia, India, Egypt, Romania, South Africa, Poland, United Kingdom, Bulgaria, Netherlands, Morocco, the United States and Canada. The essential oil content of the dried fruit is 0.15-1.7% with d-linalool (coriandrol) in the largest amounts (50-90% of the essential oil).

Sweet Basil

Ocimum basilicum L.



Sweet Basil is native to Asia, Africa and warm regions of North America; cultivated extensively in France, Egypt, Hungary, Indonesia, Morocco, USA, Greece and Israel. World production of basil volatile oil is estimated at £1,000,000. The world market for basil oil is dominated by two main types, the European and Egyptian basil oils. The European sweet basil, cultivated and distilled in Europe, the Mediterranean region and the United States is considered to be of the highest quality, producing the finest odour.

Characteristically, the essential oil from this basil contains high concentrations of linalool and methyl-chavicol (estragole), at a ratio of 2 or 3:1. Other constituents found in low concentrations include: 1,8-cineole, eugenol, α -terpineol, β -caryophyllene, geraniol, sabinene, α -phellandrene, γ -terpinene, thujone, myrcene, limonene, ocimene and p-cymene. The Egyptian basil oil is similar but with a much higher concentration and ratio of methyl-chavicol relative to linalool. Other distinct types of basil oil traded on the international market and which differ in aroma include the Comoro (also called Reunion or African basil oil), originally distilled only on Reunion Isle but now grown and distilled throughout many parts of Africa, Madagascar and the Seychelles Islands which has a licorice and a camphoraceous fragrance. The main constituent of this basil oil is methyl chavicol, with camphor sometimes present, but little if any linalool, α -pinene, eugenol or 1,8-cineole. A Bulgarian or cinnamon basil oil, rich in methyl cinnamate is also traded as a natural source of methyl cinnamate.

Damask Rose

Rosa damascena Mill.



Native to the Near East and cultivated in Bulgaria, France, Turkey, Greece, Italy, Spain and China. World production of rose oil is estimated at £26,800,000. Until the 1990's, Bulgaria was the prime supplier of rose

oil, distilled from *Rosa damascena*. Rose growing in Bulgaria suffered in the 1990's as subsidies from the post-communist government dried up and land reforms began. Farmers who got only one crop a year from a rose harvest ripped out bushes to plant grain and other seemingly more lucrative crops. At one point, Bulgaria had about 50% of the world rose-oil market, but the country saw its share fall to about 35% when growers elsewhere in the world, including Turkey, Morocco and India gained market share. Bulgaria's rose acreage is going up again, however, because growers see the crop as a high-value product. Rose-oil distillers are modernising, and producers are emphasising quality rather than quantity. Last year, according to one source, international buyers paid anywhere from \$3500 to \$3600 per kg for Bulgarian rose oil, up about 5% from previous years, for the 1200 kg of rose oil produced in Bulgaria. Some 60% of that went to the European Union and 35%, to the U.S.

Garden Sage

Salvia officinalis L.



A perennial subshrub of 0.5-0.8 m height, Garden Sage is native to South-Eastern Europe, Mediterranean region, cultivated in Central Europe, United Kingdom, USA, Russia, Bulgaria. The world production of sage oil is estimated at £1,300,000. The essential oil content of the dry leaves is 0.38-2.50% and

the major components are α -thujone (30-40%) and β -thujone (10%).

Clary Sage

Salvia sclarea L.



Clary Sage is an erect herbaceous biennial, native to Southern and Central Europe and Northern Africa. It is widely cultivated throughout the temperate regions of the world and principle production centres include France, Italy, Spain, Russia and Bulgaria. The yield of essential oil ranges from 0.1-0.3% of fresh material, depending upon environmental conditions and plant genotype. The major constituent of the essential oil is linalyl acetate (56-78%) and it also contains linalool and nerol.

Garden Thyme

Thymus vulgaris L.



A perennial plant native to Spain and Southern France and produced and collected in most European countries, including France, Spain, Portugal and Greece and in the western United States. World production of thyme oil is estimated at £750,000. The essential oil content is 0.12-2% of the fresh herb and 2-5% of the dried plant material. The essential oils of thyme are grouped into three main types: thyme oil, which contains 42-60% phenols and is mainly

thymol; origanum oil, which contains 63-74% phenols and is mainly carvacrol; and lemon thyme oil, which contains citral.

Lemon Balm

Melissa officinalis L.



Lemon balm is a perennial herb native to Southern Europe, Western Asia and North America; cultivated in Europe. The world production of lemon balm oil is estimated at a value < £100,000. The essential oil content of fresh leaves is 0.02-0.2% and the main components are citronellal (30-40%) and citrale (20-30%). Because of its low yield, lemon balm essence is very costly and almost unobtainable. Multiple harvests and optimum horticultural practices have been reported to increase the percent of extractable essential oil. The highest levels of essential oil have been extracted in late summer from the lower parts of the plant.

Lavender

Lavandula angustifolia Mill., *Lavandula hybrida* R.



An aromatic shrub native to Europe (Mediterranean basin), Lavender species are mountain species (*L. angustifolia* 700-1800 m altitude, *L. hybrida* 600-800 m altitude, *L. latifolia*=*L. spica* 400-700 m altitude). World production of

Lavandin is estimated at £7,600,000, while Lavender oil is estimated at £5,000,000. The essential oil content of *Lavandula angustifolia* (fresh material) is 0.55-1.5% and of *Lavandula hybrida* (fresh material) is 0.65-1.5%. The main components are l-linalool (40-60%) and linalyl acetate (30-40%).

Milfoil

Achillea millefolium L.



Also known as Yarrow, *Achillea millefolium* L. is native to temperate regions of Europe, but is rare in the Mediterranean. It has a wide area in Asia and North America too. The essential oil content is 0.34-1.40% and the main components

include a volatile oil comprised of azulene (more than 50%). The herb contains trans-anethole (60%).

Common Fennel

Foeniculum vulgare Mill.



Fennel is an erect growing perennial herb native to South Europe and the Mediterranean region. It has a wide area from Europe to Asia, North Africa and South America. World production of fennel oil is estimated at £1,600,000. The essential oil content of the fruit is 3.5-7% and of the herb is 1-1.5%. The main

component of the fruit is trans-anethole (70-80%) and of the herb is trans-anethole (60%).

Peppermint

Mentha piperita L., *Mentha crispa* L.



Mentha piperita is native from western Great Britain to Siberia. It is cultivated in Europe, North America, South America, Asia, Africa. World production of peppermint oil is estimated at £64,300,000 representing the greatest production of plant volatile oils. The world production of spearmint oil is estimated at £ 22,000,000, respectively about 1400 metric tonnes annually, with the United States producing 70% of the production, and China producing about 20%. The essential oil content of the dry leaves of *Mentha piperita* is 1.5-3.5% and the main components are menthol (45-70%) and menthone (8-24%). The essential oil content of the fresh herb of *Mentha crispa* is 0.2-0.3% and the main component is carvone (45-60%).

IENICA 2004

See www.ienica.net for further information