Market overview

Vibrant India

Opportunities For The Flavour And Fragrance Industry

by
Sant Sanganeria

Ultra International Limited
New Delhi, INDIA

India is the country of the future. Its economy is robust, with strong fundamentals, and it will continue to be one of the fastest growing countries in the world in years to come.

The vast and growing Indian market is a reality. The increase in the number of households headed by salary earners, professionals and businesspersons, along with the emergence of a thriving consumer finance business, have led to a steep rise in the number of consumers with greater disposable incomes. Expenditure on consumer durables has shown an impressive growth in the last decade.

India offers one of the largest markets in the world for manufactured items of mass consumption such as clothing, footwear, detergents and cooking oil. Markets for most manufactured products have exhibited strong growth rates over the past few years. Rural areas, where over 70% of Indians live, have witnessed rapid market growth in recent times, driven largely by agricultural growth, income redistribution, and inroads made by the audio-visual media. The rural share of the market for durable goods has grown steadily over the last few years.

India has an extensive sales and distribution network. It is estimated that there are more than one million market intermediaries such as wholesalers, stockist's transporters and retailers who are involved in the distribution of a variety of consumer goods. Marketers use this network to access nearly 3,800 cities and towns and more than 500,000 villages.

While urban areas have a range of distribution outlets, from large supermarkets and superstores to the smaller neighborhood retail stores, small shops that are part of the local supply network cater to almost every village in India.

The widespread sales and distribution network is supported by an equally extensive banking network. Consumer financing is an accepted form of consumer goods marketing in India. The presence of several non-banking finance companies engaged in leasing and hire purchase activities has given a fillip to consumer goods sales. The credit card market too has shown tremendous growth in recent years. The products of several international companies like Diners Club, Visa International, Master Card and

American Express Bank are widely used in the country along with the cards offered by several domestic banks.

Indian Economy at a glance

- Currently the 4th largest economy in PPP terms after USA, China & Japan.
- Will be the third largest economy in terms of GDP in next five years
- Second fastest growing economy in the world
- Among top 10 FDI destinations
- Stable Government with second stage reforms in place
- Growing Corporate Ethics (labour laws, child labour regulations, Environmental-Protection lobby, intellectual and property rights responsibility)
- Major tax reforms including implementation of VAT
- US$ 130 billion investment plans in infrastructure in next five years
- Second most attractive developing market, ahead of China
- Fifth amongst the 30 emerging markets for new retailers to enter

Indian aromatic chemical Industry overview:

- Total US$150 million.
- Fragmented and dispersed - multi product and multi faceted.
- Aroma Chemicals sold directly to large customers and through distribution channels.
- Distribution channels mostly consist of stockists and dealers spread all over India addressing small segments and retail market.
- Industry structure highly fragramented and widely dispersed.
- Western India accounts for 45-50% of total Indian chemical Industry.
- Both large and small players in Fine and Speciality bulk chemicals.
- Presence of many multinational companies

The Economy

India has the largest youth population in the world-more than 867 million people below 45 years of age! In addition there are more English speaking citizens in India than in the whole of Europe. A 300 million-odd middle class is another striking feature. With more than 600 million effective consumers by year 2010. India will emerge as one of the largest consumer markets of the world.

Essential Oil Industry

With the initiation of globalisation process and the falling values of currency from Southeastern countries, which are our immediate competitors for agricultural produces, it has become imperative to look into our priorities with more serious thoughts.

The increasing importance of natural extracts as pharmaceutical & natural cosmetic aid and their use as nutraceutical ingredients in recent times has opened up new vistas for this sector besides their widespread use as flavour & fragrance ingredients. India will play a dominant role in the production & processing of these natural extracts. Country's biodiversity coupled with competent scientific force, make our country as the best choice to become a foremost leader in aroma business in the coming years.

Our national vision is to become a significant global player by the year 2010 increasing our share in world markets from 16 percent to 25-30 percent. We have to spread our technology base and utilise the vast resources and opportunities made available by the rest of the world.

Present Scenario: The world's total production of essential oils is estimated at about 1,00,000-1,10,000 tons and India stands at No. 3 contributor with a share of 16-17 percent. In value terms India's position is No.2 with the share of 21-22 percent, thanks to mint revolution in North India. Brazil with its production of Citrus oil at 40000 tons, is the largest producer of essential oils in the world. However, its share in value terms is only 9.0 percent. (start the United State, by the way is undoubtedly the largest producer and consumer of essential oils.) Turpentine oil is not included in the data.

T-1, T-2 & T-3 depict the share of various countries in production of essential oils. For clarity, these have been divided into three categories: Essential Oils for processing (Isolate/Chemicals), Fragrances (Exotic) and Flavours. This categorization is not in strict terms as there are some overlaps and common uses other than specified.

T-4, T-5 and T-6 show the details of these production of Essential oils for flavour. In addition, T-7 presents a comparison between global production and India's share of production for the three categories of essential of usage. To elaborate further, essential oils for flavour have been sub divided into three categories. (T-8)

Estimated World Production of Essential oils for Processing (Isolates/ Chemicals) T-1

Essential Oil	Quantity (Tons)	Production Countries
Basil	350.00	India
Camphor	100.00	China, Taiwan
Cedarwood	2000.00	China, USA, India
Citrata	40.00	India
Citrodora	1000.00	China, Brazil, India, South Africa
Citronella	2000.00	China, Indonesia, India
Clove leaf/stem	1500.00	Madagascar, Indonesia, Tanzania
Eucalyptus	3000.00	China, India, Australia
Howood/leaf	100.00	China
Jamrosa	20.00	India
Lemongrass	300.00	India, China, Guatemala
Litsea Cubeba	600.00	China
M. Arvensis	18000.00	India, China, Brazil
Sassafras	400.00	China, Brazil
Orange	50000.00	Brazil, USA, Israel, Argentina
Others	1000.00	
Total	**80410.00**	

Estimated World Production Essential Oils for FRAGRANCES (Exotic)		T-2
Essential Oil	**Quantity in tons**	**Producing Countries**
Amyris	40.00	Haiti
Armoise	15..0	Maracco, Tunesia
Basil (Exotic)	50.00	Egypt, Comros, France
Bay	40.00	Dominica, Puerto Rico
Bergamot	60.00	Italy, Ivory Coast, Guinea
Cajuput	40.00	Vietnam, Indonesia
Cananga	40.00	Indonesia, Madagascar
Chamomile	10.00	Moracco, Egypt, Belgium, Italy, France
Cistus	20.00	Spain, France, Yugoslavia
Clary sage	150.00	Russia, France
Cinnamon Leaf	100.00	Sri Lanka, Seychelles, India
Cypress	10.00	North Africa, France, Brazil
Geranium	200.00	China, Egypt, Reunion Island, India
Galbanum	10.00	Iran, Turkey
Jasmine Absolute	20.00	Egypt, India, China
Juniper Berry	30.00	Yugoslavia, Italy, Turkey, India
Lavandin	1000.00	France, Spain
Linaloe Berry	50.00	Bulgaria, France, Russia, Australia, Mexico
Lavender (Spike)	30.00	Spain, France,
Marjoram	40.00	Moracco, Egypt
Neroli	4.00	Spain, Paraguay, Tunisia
Palmarosa	50.00	India, Brazil, Paraguay
Patchouli	800.00	Indonesia, China, Malaysia
Petitgrain	200.00	Paraguay, Italy, Israel, Brazil, Argentina
Pine Needle	40.00	Russia, China
Pimento Leaf/Berry	30.00	Jamaica
Origanum	15.00	Albania, Spain, Yugoslavia
Rose oil/absolute	40.00	Turkey, Bulgaria, India, China
Rosemary	150.00	Spain, Moracco, Tunisia
Rosewood	60.00	Brazil, Paraguay
Sandalwood	60.00	India, Indonesia, Australia
Sage	80.00	Spain, Yugoslavia, Albania
Styrax	25.00	Haiti, Turkey
Thyme	100.00	Spain
Tea Tree	300.00	Australia
Tagetus	5.00	South Africa, Egypt, Reunion, India
Taragon	10.00	Moracco, Yugoslavia, Hungary
Vetiver	100.00	Haiti, Indonesia, China, India, Reunion, Brazil
Wintergreen	20.00	China, Nepal
Ylang Ylang	100.00	Comoros, Madagascar, Indonesia
Others	200.00	
Total	**4344.00**	

Estimated World Production of Essential oils for flavours		T-3
Essential Oils	**Nutmeg Qty(Tons)**	**Production Countries)**

Ajowan	20.00	India
Anethi/Dill Seed	70.00	Poland, Russia, India
Anise	10.00	Spain, Egypt
Caraway	30.00	Poland, Netherland, Egypt
Cardamom	40.00	India, Sri Lanka, Guatemala
Cassia	300.00	China Indonesia
Cassia/Cinnamon Bark	100.00	USA, Sri Lanka, China
Celery	50.00	India, USA
Clove Bud	100.00	Madagascar, Indonesia, Sri Lanka, India
Coriander	250.00	Russia, Egypt, Poland, Romania
Cumin	30.00	Iran, Turkey, Egypt, Spain, India
Dill Seed	80.00	USA, Hungary, Bulgaria, Russia, Egypt
Fennel	40.00	Spain, Egypt, Russia, Portugal
Ginger	50.00	India, China, USA
Citrus (others)	100.00	USA, Israel, Spain, Argentina
Grapefruit	350.00	Israel, Brazil, USA
Lemon	3500.00	Argentina, Italy, USA, Brazil, Israel
Lime	1200.00	Mexico, Peru, USA, Haiti, Brazil, Cuba, Ivory Coast, Italy, India
Mandarin	100.00	Argentina, Italy
Nutmeg	400.00	USA, Indonesia, Sri Lanka, India
Onion/garlic	20.00	Mexico, China, Egypt, Spain, France
Orange (Folded)	5500.00	USA, Brazil, Dominica, Italy
Orange (Bitter)	40.00	India, Sri Lanka
Pepper	90.00	USA, India
Peppermint (Piperita)	4000.00	USA, India
Peppermint (Arvensis)	2500.00	India, China
Spearmint/Scotchmint	2000.00	USA, India, China
Tangerine	300.00	Brazil, Spain, Mexico
Others	400.00	
Total	21670.00	

Citrus Oils (in M. Tons)

T-4

Essential Oils	**World Production**	**India's Production**
Grapefruit	350.00	0.00
Lemon	3500.00	-
Lime	1200.00	20.00
Orange (sweet)	55000.00	20.00
Orange (bitter)	40.00	-
Mandarin	100.00	-
Tangerine	300.00	-
Others	200.00	-
Total	**60690.00**	**40.00**

Mint Oils (in M. Tons) T-

5		
Essential Oils	**World Production**	**India's Production**
M. Aravensis	16000.00	12000.00
M. Piperita	4000.00	300.00
Spearmint	2000.00	300.00
Others	200.00	-
Total	**22200.00**	**12600.00**

Spice Oils (In metric Tons)		T-6
Essential Oils	**World Production**	**India's Production**
Anise	40.00	-
Anethi/Dill Seed	70.00	20.00
Ajowan	20.00	20.00
Caraway	30.00	-
Cassia	300.00	-
Celery	50.00	25.00
Cardamom	40.00	25.00
Cinnamon/Cassia bank	100.00	-
Coriander	250.00	-
Cumin	30.00	5.00
Clove Bud	100.00	5.00
Dill Weed	80.00	-
Fennel	40.00	01.00
Ginger	40.00	20.00
Nutmeg	400.00	40.00
Onion/garlic	30.00	01.00
Pepper	90.00	60.00
Others	150.00	40.00
Total	**1860.00**	**262.00**

Global Production and India's market share in essential oil Production		T-7
Category	**World Production**	**India's Share**
Essential Oils for fragrances (exotic)	4344.00	4.0%
Essential oils for processing	80410.00	21.0%
Essential oils for flavours	21670.00	14.0%

Essential Oils for flavours and India's production share of each category		T-8
Essential Oils Category	**Production in Tons**	**India's Share**
Citrus	60690.00	0.6%

Mints	22200.00	57.0%
Spices	1860.00	13.2%

From the data, it can be concluded that India has a strong base for essential oils that can be enhanced even further. Another obvious conclusion is that India has taken a lead in mint oils, which in subsequent years will make industry's position stronger, provided the country continues improving the yield and quality of oils.

Aroma Chemicals / Isolates

Now, let us consider the position of synthetic aroma chemicals and natural Isolates / Chemicals. The World production of aroma chemicals (synthetic) and natural isolates and chemicals is estimated at above 2,30,000 tons. For better clarity, these two categories of chemicals will be taken up separately. (T-9)

Global production and India's market share in chemical production T-9

Chemical	Estimated World Production (in tons)	India's Share in tons%
Synthetic	1,80,000	5000 / 3.0%
Natural	50,000	7000 / 14.0%

Export Potential: India has also become self sufficient in many essential oils and their isolates and imports have been restricted to few exotic oils, like geranium, patchouli, clarysage, lavendin and also Clove, Cinnamon etc. However, imports of aroma chemicals are still substantial.

India' s present exports of essential oils and their value added products including menthol have crossed US$ 230 Millions. It is estimated by the 2010 export will reach US$ 350 Millions.

Future Scenario: The World has become a global neighborhood as a result of communication techniques and free market policies. No one out of reach of development taking place on the other site of the planet. The effect of globalisation is particularly evident in the mergers and acquisitions of even the largest Multinational Companies that seek to broaden their operating base.

The Challenges : Markets are demanding new value added flavours and fragrances. Innovation and creativity are most important factors for survival. In order to achieve this, new ingredients are being searched for. Knowledge and expertise are getting costlier. Advance countries are not investing in production of traditional raw materials they are concentrating on unusual raw materials and final products i.e. flavours and fragrances. In the case of natural extracts more emphasis is being given on the part of efficacy and utilization of knowledge in creating novel products. fast-moving consumer goods (FMCG) companies depend more and more on Flavour and fragrance companies to develop their Cosmetics, Toiletries and other products.

Technologies, which do not guarantee performance, are of no value. Another trend, which is quite perceptible, is demand for green products i.e. natural flavours, fragrances and other natural extracts of herbs, woods and spices.

Regulations are being made more stringent, while the importance of safety and health claims has become a top priority. The result is that it has become more and more difficult in introduce a new essential oil or aroma chemical or herbal extract without performing more than 100 tests and obtaining certifications from authentic laboratories on safety aspects. These tests are quite elaborate and require funding. Today's R&D activities cannot remain limited to merely identifying a new strain of an essential oil bearing crop or new source of existing aroma chemical on the basis of its major component.

A new strain has to be thoroughly investigated for all major, minor and trace constituents by advance chromatographic techniques and their safety data collaborated.

Consumers have become more discerning, demanding more intensive flavours/ fragrances and healthy indulgence products. Products having anti-stress, anti-aging or health promoting benefits but at the same time, possessing intensive flavour or sophisticated fragrance are being preferred.

The implication of ingredients supplier is that more information on functionality and efficacy of ingredients will be needed. This means that more clinical studies need to be done, as authenticated results are needed by the users of flavours/fragrances in order to make health claims on their products.

Aroma Chemicals

Environmental protection laws and safety consideration are becoming paramount in most of the developed countries. Cost of investments and operating cost are also getting higher each year. Under these circumstances, the clearances for new projects are tough to obtain in developed countries and there project cost are running in millions of dollars. As a result, world is looking towards developing counties, like, India and China to do all the processing of aroma isolates and chemicals for the future. This is to be accepted as a challenge and also as an opportunity to develop these isolates/ chemicals keeping the large global markets in view.

Although it appears a rare possibility to take a lead in production of aroma chemicals (synthetic), India has to develop suitable technologies to utilize its raw materials, especially by-products (T-10). Utilization of by-products will give more value addition and an extra edge over competitors. This will further ensure a better price for Indian oil producers.

Promising raw materials	T-10
Item	**Qt. available (in tons)**
L-Limonene	200
3-Octanol	40
Menthone	600
Delta 3 Carene	>1000
Longifolene	600
Himachalene	100

Natural Chemicals / Isolates

Another factor, which goes in favour of our country's richness in natural flora, is the awareness and preference for natural oils and isolates for flavours, aromatherapy, herbal cosmetics and even pharmaceuticals. This trend is catching fast in USA, Europe & Japan and as a result, the demand for natural isolates has gone up. World is looking towards novel isolates to be used as a pan of their flavourings which are being preferred by end users from safety point of view. Naturals have started replacing synthetic flavours all over the world. This market is enormous. The prices of natural chemicals are much higher than prices of similar synthetic ones.

India's share in natural isolates chemicals is around 14percent. It focus however, is in developing many isolates and chemicals by fractional distillation of new essential oils or utilizing biotechnology or reactions with natural chemicals. If the country's industry is successful in producing natural esters by fermentation or by natural reactions, its positions will be quite strong. Even conversion of Methyl Chavicol to Anethole by a natural process will be helpful to some extent.

Most of the natural alcohols are easily available in India. Even natural acetic acid (natural vinegar) is available. We have to look for other acids and develop a technology to produce natural esters.

Minor/Trace Components of Essential Oils

This is another highly rewarding area to look into India's capacity to produce many oils having different compositions can prove a boom to this industry. Even if we screen different varieties of Cymbopogon and Ocimum, we will come across hundreds of isolates, which have tremendous value and scope. One such guideline on "Minor/Trace constituents" has already been prepared. Some of these isolates, which need immediate attention, are listed in T-11

New aroma isolates of importance	T-11
Anethole	Trans-2-hexanal
Aldehydes (C-7 to C-12)	Cis-3-hexanal
Bisabolene	Cis-jasmone
Bisabolol	Lactones
Benzyl Alcohol	Menthofuran
Benzaldehyde	Myrecene
Borneol	Neryl Acetate
Carvacrol	Nerolidol
Cedrol	Nootkatone
Cinnamic Aldehyde	Rose oxide
Cinnamyl Ace and Alcohol	Sabinene
Damascenone	Sabinene hydrate
Dimethyl Sulphfide	Sinensals
Eudesmol	Terpineol
Farnescene	D-Terpinyl Acetate
Farnesol	Terpin-4-ol
Geranyl Acetate	Virdifloral
Germacrene D	Vanillin

Natural Essential Oils Sector

The use of natural essential oils is on the rise although present demand for exotic essential oil for use in natural cosmetics, aromatherapy, pharmaceuticals and combined with natural flavours is about 6500-7000 tons and shall increase considerably in the future. India's production of exotic oils is far behind expectations. However, with the efforts of industry and associations, developmental work has already been taken up by R&D Institutes. We hope India will be able to meet its own requirements of many exotic oils like geranium, patchouli and lavender by 2010.

These days, advanced countries are demanding functional fragrances where odour value of a fragrance is reinforced with natural oils. Thus many exotic essential oils, like, Geranium, Lavender, Rosemary and Clarysage, Junipers, Sandal are finding favor in new blends. Many citrus oils, like orange lemon and lime are still to be introduced by India, followed by petitgraing and neroli oils. this will be posible when the food processing industry advances in India, which is likely to occur.

New sources of essential oils or new varieties of essential oils from Ocimum and Cymbopogon, leaves of forest trees, which can be made available on sustainable basis and can be cultivated, subsequently, are to be searched for as a source of new aroma isolates.

Natural Flavours Sector

Japan and the developed western countries are moving towards green revolution, stressing more natural flavours & fragrances. This is the reason that growth rate in this sector is 8 -10 percent.

Natural flavours / fragrances are blended using only natural isolates / chemicals. It is worth nothing that more than 10 producers of natural isolates and chemicals have emerged recently in the uniteed States alone. Glancing in any widely circulated journals, one will observe that the ratio of advertisements of natural chemicals vs. synthetic chemicals have increased from 20:80 to 50:50 (T-12 through T-14). This sector is going to outgrow synthetic flavour / fragrance sector by 2010.

Essential Oils (Existing) T-12

Esential Oil	Present Production 2005 in tons	Estimated production by 2010 in tons	Value (In Million US$)
Basil	500	1000	5.682
Cedarwood	150	200	0.909
Citronella Java	400	550	3.375
Jamrosa	100	400	2.727
Lemongrass	400	800	8.182
M. Citrata	50	150	1.875
M. Piperita	800	1500	20.455
M. Arvensis	18000	28000	254.545

Palmarosa	80	160	2.182
Pepper	80	120	10.909
Sandalwood	40	60	75.000
Spearmint	800	1300	14.773
Others	400	800	10.909
Total		**35040**	**411.523**

Essential oils (new) T-13

Essential oils (new)	Present Production 2005 in tons	Estimated production by 2010 in tons	Value (In Million US$)
Cymbopogon (new)	50	100	1.364
Geranium	50	100	9.091
Lavandin	10	50	1.364
Lavender	05	10	0.454
Patchouli	30	60	2.045
Ocimum (new)	50	100	1.364
Rosemary	20	40	1.364
Others	50	100	2.273
Total Tons		**560**	**19.319**

Value Addition to Oils **T-14**

Essential Oil	Present Production 2005	Estimated production by 2010	Value (In Million US$)
Anethole	300	900	8.182
M. Chavicol	100	200	1.818
Linalool	77	150	1.704
Lin. Acetate	12	20	0.364
Menthol	11000	18000	245.454
Menthone	1400	2100	9.545
Liquid Menthol	400	750	5.114
Hexenols	05	05	2.841
Octanol	15	15	0.170
Thymol	150	150	1.705
Carvone	50	100	1.818
Citral	80	100	1.591
Citronellol	150	200	0.227
Geraniol	80	120	1.364
Others	400	800	7.273

Total		**23610**	**289.170**
Less cost of Essential oils used			**216.870**
Net Value Addition			**72.300**