

Essential Oils in a Changing Global Scenario: The Essential Oil Association India (EOAI) Looks Toward the Future

Essential oils, biotransformation, chemosensates and cooling compounds, and hydrosols

Reported by Mayuri Saini, Khajuraho, India

The Essential Oil Association of India (EOAI) meeting at Khajuraho in Madhya Pradesh, held February 17–19, started out with a dedication and a promise: the dedication to more growth, agriculture and development of aromatic plants, and a promise of 300 acres of land for aromatic plant agriculture from the Madhya Pradesh minister for agriculture, Ramakrishna Kusmariya.

“It was a very positive note to begin the session,” says Rohit Seth, chairman of the organizing committee of EOAI. “The most important thing was that we could motivate the industry and the government to look at investing more because that is a key concern at this time. The demand for essential oils has increased, but not the supply. We also have a lot of concern about how to cut costs without harming quality and how to motivate more farmers to grow crops for essential oils.”

The event, which is held every other year, provides a forum for discussion and networking focused on the theme “Essential Oils in a Changing Global Scenario.”

Perfumery Seminar

For the first time, a one-day perfumery course was introduced before the event. Serving more than 40 perfumers from all over the country, attendees brushed up on their knowledge and compared notes about techniques, know-how, recent developments in fine perfume and more.

“It is important to have more technical sessions for knowledge sharing and not to use these meetings only as networking tools,” says S.C. Varshney, chairman of the EOAI technical committee. “Technology has grown tremendously each year, new molecules keep coming in and there are changing ways of using fragrance in products. We want our perfumers to be aware of all of these and learn to get ahead.”

India’s Global Supplier Role

Discussions at the sessions focused on the global scenario for essential oils as well as India’s changing role in the supply chain. The global turnover of the essential oil industry is estimated to be \$14 billion, with a production of 106,424 tons of material. Of this, according to

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—Rohit Seth

Indian industry estimates, India’s share of essential oils for fragrance is 4%, flavors 14% and essential oils for processing 21%.

India has had an increasing success with the production and sales of mint oils.

“Over the past two years there has been a growing focus on naturals, natural oils and the development of mint which has been one of the great success stories in the industry,” says Varshney. “Spice oils and oleoresins are doing well, too. India and China are the biggest markets of the future.”

However, he cautioned, one of the problems is the fast growth and development of synthetic menthol by players such as Symrise and BASF, which will come on line by 2013 and has the prospect of impacting the Indian industry because synthetic materials can be produced in vast amounts without the limitations faced by the natural products.

Production Base of Natural Essential Oils

“India is now the biggest producer of *Mentha piperita*, surpassing production from the United States,” says V. Shankamarayan, an industry veteran who has been associated with perfumery for more than 25 years. This mint, he adds, has been produced at a good quality and price.



The EOAI committee, from left: Anil Katyal, S.C. Varshney (chairman of the EOAI technical committee), R.L. Gupta, Rohit Seth (vice president of FAFI and chairman of the organizing committee of EOAI), Arvind Nanda and Yogesh Dubey



A pledge of unity was the theme behind this year's event.

As the demand for essential oils continues to increase, and as they find application in pharmaceuticals, nutraceuticals, cosmetics, and flavor and fragrance, the concerns of the essential oil industry have changed. Agro technology has played a major role in the changing scenario; experimental farming conducted with the aid of some of the government programs has shown encouraging results in improving quality and yields.

While sandalwood oil from Mysore has been intrinsic to India, it has lost much of its prestigious positioning with poor governmental planning and the introduction of sandalwood oil from Australia. (A variety that is different from Indian sandalwood.)

Despite this challenge, in the coming years India will find itself in a unique position as the “production base of natural essential oils,” Shankarnarayan observed, adding that there were several key ways to progress, including incentivizing scientists, farmers and other collaborators. Change will be quicker if the industry connects and communicates better, collaborates more, shows more commitment and celebrates success better, Shankarnarayan says.

Biotransformation and Its Effects

As the demand for essential oils rises, their quality profiles need to change and be updated for different mediums. One of the means of making a change in oil is through biotransformation. In terms of fragrance and flavor, this can be conducted with purified natural compounds with the help of microorganisms.

Working on the biotransformation of patchouli oil, Ashwini Jayaram, research assistant, Department of Horticulture, University of Agricultural Services, Bangalore, said that the initial observations have indicated the isolated rhizobial microorganisms play an important role in enhancing the quality of oil. The main constituent of the oil, patchouli alcohol, increased by 49% when exposed to key microorganisms, compared to control (30%), she says. The key question is how this process can be made stable or cost effective. The market potential for patchouli is growing fast. India currently produces 300 tons per year out of an overall estimated global consumption of 2,000 tons per year.

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Chemosensates and Cooling Compounds

G.S Ranade, who is a consultant to several companies and has more than 40 years experience in the industry, brought up the growing role of cooling compounds in fragrances and flavors. Cooling compounds act on the skin by action and evaporation or through nerve endings at the receptor level of the skin or tongue. These are used in cosmetics, beauty creams, shampoos and oral care products.

Chemosensates are able to induce a feeling of temperature change without changing actual physical temperature. These can include pungent, hot, cooling or astringent compounds. A well-known compound fitting this description is menthol, which is considered a benchmark for all comparisons.

Ethanol is a surprisingly simple molecule with a strong and versatile physiological activity of cooling and warming. But unlike ethanol, true physiological coolants exert chemical action at nerve endings associated with the sensation of cold, says Ranade.

Menthol has kept its positioning as the most popular coolant and will continue to do so because it is irreplaceable in many applications. However, its disadvantages are that it is highly volatile, has a strong smell and a bitter taste, and gives a burning sensation in higher concentrations, Ranade comments. He also warns that it is important to be aware of the differences of perceptions and tastes between the East and the West.

Ranade explained that several companies have been trying to find coolants stronger than menthol. Only a few molecules out of more than 1,000 that have been researched have been found to have cooling properties.



A view of the registration table



A view of the trade show floor

These include Wilkinson Swords Compounds (for comparison, menthol's cooling power baseline is 100):

- WS-3 Cooling power 150
- WS-5 Cooling power 230
- WS-12 Cooling power 150
- WS-14 Cooling power 75

Hydrosols, a Growing Economic Opportunity

B.R. Rajeswara Rao of the Central Institute of Medicinal and Aromatic Plants Research Centre Boduppal, Hyderabad spoke about hydrosols and water-soluble essential oils of aromatic plants and their growing role in industry. He explained that although India is a leading producer of essential oils of several aromatic plants, hydrosols are currently not utilized there. He says that the value of the hydrophilic essential oil fraction that escapes into the distillation water stream is estimated to be \$50–100 million in India.

At this point, aroma therapists are using hydrosols as substitutes for essential oils as well as standalone aromatherapy products. Hydrosols are also used in different countries for food flavoring, as fragrances (rose water) and in traditional therapies. Rao says that in India there is a need to scientifically collect, process and utilize these by-products of aromatic plant distillation to benefit the farmer as well as the industry.

Looking Ahead

Other important papers and themes came up for discussion during the EOAI event. These included the development of menthofuran mint, essential oil-based natural mosquito repellents, essential oils and cosmeceuticals, and pesticide residues in essential oils. The industry attendees encouraged unity to bring the government into its plan of action for growth and support. Many at the event believed that there is enough passion and belief and perhaps even sheer economics to keep the essential oil industry in India growing at a brisker pace than ever—at least in double digits.

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