



BCIL seeks partners to license...

High value essential oil from *Dracocephalum heterophyllum*

Biotech Consortium India Limited (BCIL) is seeking companies interested in commercializing a technology used for high value essential oil from *Dracocephalum heterophyllum*. Scientists at Institute of Himalayan Bioresource Technology, Palampur have developed a technology for the extraction of novel essential oil containing high value perfumery compounds in high yields from a cold desert plant *Dracocephalum heterophyllum benth.*

Introduction:

The essential oils from natural plant sources command a distinctive advantage over synthetic fragrant molecules due to their long lasting aroma, stability and non-reactivity to human skin or consumption. The most extensively used source of perfumery chemicals e.g. Citronellol, Geraniol, Rose oxides and their derivatives find extensive use in soap, perfumery, cosmetics, confectionaries and flavouring industries throughout the world. At present the world production of Citronella oil is approximately 7,000 tonnes, the bulk of which is produced in South East Asian countries including India.

Technology:

- **Product:** High value essential oil from *D. heterophyllum*.

High value odour constituents:

- l-citronellol, *cis*-rose oxide, *trans*-rose oxide
- l-citronellal, citronellyl acetate, citronellyl isobutyrate, geraniol, geranyl acetate

- **Process:**

- Development of a simple portable mini-distillation apparatus named-“Herbo-Still” for obtaining maximum yield of essential oils and hydrosols (**US Patent No. 6911119 dated 26.6.2005 (GRANTED), Patented in Argentina: AR 027701-B1**)
- Separation and purification of high value odour constituents by Gas Chromatography and Gas chromatography mass spectra



US patented technology for high value essential oil from *Dracocephalum heterophyllum*

Key Features:

- Essential oil derived from *D. heterophyllum* (aerial parts) is a new commercial source for citronellol, *cis* and *trans* rose oxides, citronellyl acetate, geranyl acetate and citronellyl isobutyrate. This unique combination of high valued odour constituents categorises this oil for use in high grade perfumery and cosmetics.
- *D. heterophyllum* contains higher content of citronellol and rose oxides.
- Essential oil yield is substantially higher (0.45% on fresh wt. basis) than any other reported species of *Dracocephalum* (0.2-0.35% w/v). High valued odour constituents like citronellol and rose oxides can be provided from an alternate and cheap source of oil in comparison to other expensive sources like Rose and Geranium oils.
- Quality parameters and the standards of the essential oil have been established.
- The present technology also provides a specialized US patented Herbo- still designed for obtaining maximum yield of essential oil and containing the above compounds.
- Cheap alternate source of rose oxides which are high valued perfumery compounds.
- *D. heterophyllum* oil can be used in the perfumery industries due to high valued odour constituents 1- citronellol and *cis*- and *trans*-rose oxides.

Shelf life and storage:

- Shelf life: 3-4 years at 4 - 8°C.
- Prolonged storage at -20°C.

Toxicity analysis:

- Safe for external applications (as per IFRA guidelines).
- Environmentally safe (No toxic effluent generated).

Market:

The worldwide flavour and fragrance ingredient market is worth approximately \$ 6.3 billion in 2006, poised to grow \$ 7.8 billion in 2011 with an average annual growth rate of 4.5%. World demand for quality essential oils and their derivatives is poised at \$ 5.0 billion by 2011 with an AAGR of 5.2% where Indian market's contribution will be approximately \$ 1.8 billion.



US patented technology for high value essential oil from *Dracocephalum heterophyllum*

Patents :

- A simple portable mini-distillation apparatus for the production of essential oils and hydrosols (US Patent No. 6911119) dated 26.6.2005, Argentina: **AR 027701-B1**(GRANTED)
- Essential oil from cold Desert plant for high value perfumery compounds. Patent filed in:
 - Zambia: **Patent NO # 2004/7701** (GRANTED)
 - India; **Patent NO #0084 NF 2002/ID**
 - Brazil; **Patent NO # 0084 NF 2002/BR**

About Inventor:

Dr. V.K. Kaul is EX- Scientist & Head, Natural Plant Product Div., IHBT and presently working as Project advisor. He has 30 years of experience in isolation and characterization of novel odour molecules from essential oils and has 8 patents (3 granted, 5 filed) and 84 papers in peer reviewed journals. Er.Kiran Babu designed the Herbo-still and Director, IHBT Dr P.S.Ahuja conceptualised the plan.

About BCIL:

BCIL was incorporated as public limited company in 1990 under the Indian Companies Act 1956. It is promoted by the Department of Biotechnology, Government of India and is financed by several all India financial institutions, venture capital funds and the corporate sector. BCIL has been actively involved in technology transfer, project consultancy, fund syndication, information dissemination, and manpower training & placement related to biotechnology over the last decade and half. BCIL has transferred more than 15 technologies in the last 5 years using its expertise in facilitating licensing agreements that allow healthy and productive cooperation between the inventor and the licensee.
