



Growing with India

Essential Oils, Oleoresins and Nutraceuticals

India Now!

- Value added Spice Production started in the early 70's
- Oleoresin and Essential Oil industry – Constantly Evolving
- Synthetic giving way to NATURALS
- Farm to Fork traceability becoming a Norm
- Sustainable raw material sourcing gaining importance
- Customers prefer Clean label products
- Industry seeing high investments in R&D
- Application support now an essential part of customer service
- Phytochemicals are the hottest Nutraceutical ingredients



Essential oils

Smell is innate...

An unconscious activity that has enormous effect on our physiology.

We can distinguish 2000 to 4000 different odours!

Retains the characteristic odour of the plant or sources from which it is distilled.

The aroma , varying from sweet to stimulating ignites our senses!



Essential oil Applications

Perfumery

Food and beverages

Nutraceuticals

Phytogenic additives

Natural insecticides

Aroma therapy



New Developments

The merging of science & technology led to many innovative ideas !

Novel Encapsulation technologies to preserve flavour.

Granulation technology to extend the areas of application.

Fractional distillation to enrich active components.

Microbial assisted treatment to change the flavour profile without any change in the active constituents.

Immense possibilities of essential oils from Mediterranean spices.

Oleoresins

The Convenience Food trend has been the driving force behind the development of Oleoresins.

Mainly used as a standardized food ingredient.

Provides multiple new product development possibilities in the food and beverage segments.

The Oleoresin variants and blends cater to the specific sensory aspirations of the discerning consumer.

Mainly composed of essential oils, polyphenols, flavonoids, carotenoids, saponins...



Range of Products

Ranges from specialty extracts to normal spice/herb extracts

The demand of roasted flavours has led to emergence of many specialty extracts with fried or roasted notes

Oleoresin Spice blends made of different herbs/spices can be an effective alternative to traditional recipes providing a **juicier, spicier** and **fresher** flavor in the final product



Crystallized Products

Active component isolation has opened up numerous functional possibilities

The crystallized product ends up with high purity of the active components.

Most oleoresins can be made available in Crystallized form to enrich the active components

The dosage of crystallised products will be very low compared to normal oleoresins.

Natural Colours

Colour – the single most important product-intrinsic sensory cue when it comes to setting people's expectations regarding the likely taste and flavour of food and drink

Even early civilizations such as the Romans recognized that people "**eat with their eyes**" as well as their palates.

Regulatory Guidelines specify that food with coloring property can be categorized into food color or coloring food based on selective/non selective extraction .



Different Hues

Green

Light green colour of a lemon to the dark vibrant green of an olive

Napier Grass,
Mulberry

Red

Pale red of a Malayan apple to the deep red of wine

Beetroot, carmine,
hibiscus

Orange

Light orange of an apricot to the deep orange shade of the sunset

Paprika , Annatto

Pink

Delicate pink of a rose to shocking candy pink

Red beet

Yellow

Banana yellow to Golden yellow

Turmeric

Applications

Beverages

Dairy Products

Confectionaries

Jellies

Meats

Pickles



Super Critical Fluid Extraction

SCFE utilizes supercritical fluids, which above their critical point exhibit liquid-like (solvent power, negligible surface tension) as well as gas-like (transport) properties

The extraction can be liquid-liquid, Solid –liquid, depending on the requirement

The flavour and phytochemical profiling of SCFE products will be unique compared to the conventional solvent extracted products.

Unique Advantages of SCFE Products

- Solvent free
- High Purity
- Absence of heat during process
- Versatile and efficient





Plant Lipids[®]

Healthy Living with Spices/Herbs

- Herbs and spices are among the richest sources of antioxidants/phytochemicals.
- Herbs and spices may also offer synergistic effects with other bioactive components of foods, thereby increasing the health payoffs.
- Since herbs and spices are naturally low or free of calories, fat, saturated fat, sugars and sodium, they are a perfect way to increase the flavor of foods without additional calories



The World of Nutraceuticals

The term “Nutraceutical” was coined from “Nutrition” & “Pharmaceutical”.

The Global Nutraceutical market was estimated as \$166 Billion in 2014 and is expected to touch \$279 Billion by 2021 – CAGR 7.3%

Indian market expected to cross \$6.1 Billion by 2020

The different categories of nutraceuticals include

- Dietary supplements
- Phytochemicals
- Nutrients

Many Plant derived phytochemicals possess potential benefits to be used as nutraceutical ingredients



Functional Benefits of Spices

Turmeric

Prevents Cancer, prevents liver disease, reduces cholesterol levels, prevents Alzheimers disease.

Garlic

Lowers cholesterol and blood pressure, anti inflammatory, prevents cerebral aging, boosts immunity

Ginger

Antioxidant, for gastric problems, anti emetic, anti microbial, aids in digestion

Chilli

Anti oxidant, enhances metabolic effects in weight management

Basil

Anti oxidant, inhibits lipid peroxidation, decreases inflammation

Oregano

Anti oxidant, anti microbial

Rosemary

Anti oxidant, inhibits bone resorption, anti carcinogen

Cumin

Aids in digestion, helps relieve stress and anxiety, helps prevent premature ageing



Bio Available Curcumin

Curcumin, a hydrophobic polyphenol derived from the rhizome of the herb *Curcuma longa* has a wide spectrum of biological and pharmacological activities

Due to poor absorption, rapid metabolism, and rapid systemic elimination, curcumin exhibit poor bio-availability.

Various formulations to increase the bio availability of curcumin - the key point of recent research.

It includes addition of bio availability enhancers, entrapment in natural matrixes etc.



Why Nutraceuticals?

The purpose of nutraceuticals is to maintain or improve key functional aspects of the human body which include...

- Bone health
- Digestive system
- Immune system
- Cardiovascular system
- Dental health
- Eye Health

- A wide range of Essential Oils and Oleoresins evolving with the changing taste preferences of the consumer.
- Global Regulatory Compliant and Safer Products
- New technologies like SCFE, active component isolation bringing in further value addition and wider acceptance
- Food Colours and Colouring Foodstuff steadily replacing synthetic colours
- Indigenous R&D unlocking the functional properties of Spices....

Thank You!

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