

# **Recent Technological Innovations**

Clean Label Ingredients



# Natural Sweeteners

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- There are various sources of natural sweeteners available in the market such as Honey, Maple syrup, Stevia, Agave etc.
- Companies are still looking for other natural and more healthy options as sources for sweeteners.
- An ingredient “**Allulose**” was prepared **using enzymatic conversion of corn**. The ingredient is **ultra low-calorie sugar** and is manufactured by **Tate & Lyle's Dolcia Prima**
- **Cargill** prepares **Stevia leaf extract** which is much healthier alternative than stevia and is higher in demand.
- **Purecircle** is also an active player for producing stevia based sweeteners
- **Ingredion** is distributing **Sweegen's Reb-M** which is stevia based sweetener **produced by bioconversion** of steviol glycosides by using enzymes from yeast causing enhanced fermentation.
- New sweetener identified recently is **Siratose** by **Senomyx** which is **zero calorie and high potency sweetener obtained** from **monk fruit extract by fermentation technique**

- Novel flavors are in demand to impart freshness to the product. Also the processing of food products leads to loss of flavor or development of off flavors or bitterness, which require need for taste modifiers or bitterness masking agents in food.
- Several companies are manufacturing and supplying flavors using techniques like **encapsulations – matrix or core encapsulation, spray drying or fluidized bed drying, enzyme technology, novel extraction and distillation techniques such as high pressure extraction, molecular distillation and others.**
- These techniques have been utilized by various companies to produce flavors and aromas from natural sources without any thermal degradation and damage.
- Enzymes themselves acts as clean label and are used alone or in blends for flavor development in various food products. For e.g. **lipase enzyme have been studied a lot for its effect on flavor development..**

- There is huge demand for natural food colors in food industry.
- A new food color derived from a **purple corn hybrid cultivated** in the U.S., is available from [DDW](#). The **non-GMO**, kosher coloring delivers a vibrant red to purple hue, depending on pH, with a clean, neutral taste.
- [Sensient](#) offers **SupraRed**, a heat-stable natural red color for flavored milk, neutral pH baking and dry grocery products. It provides significant advantages for dairy applications such as UHT packaged beverages.
- [Roha Dyechem Pvt Ltd](#) has created **Natracol Ultra Cran Red** which is **natural replacement** for **carmine** ingredient that gives red colors and commonly used in dairy sector.

# Natural Preservatives

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- Natural preservatives or minima processing preservation technique are high in demand in food industry.
- Recent development shows products like –
- **DelvoCid** from [DSM](#) that helps keep drinks fresh and clean-tasting for longer periods. It **improves flavor** profiles, and provides **high protection against spoilage of mold and yeast** (specifically sorbate-resistant yeast).
- [DuPont's](#) antimicrobial products contains **cultured dextrose, green tea extract, and mustard essential oil**. It does not alter taste or color and can be easily incorporated.
- [Naturex](#) recently **partnered** with the lactic acid firm [Galactic](#) to develop a product with the **antioxidant properties of rosemary and the antimicrobial capabilities of organic acids made via fermentation**.
- **Phytoshield** from [PLT health solutions](#) provides **natural flavor** and also protect and **extends shelf-life**, and have **antibacterial effect**.

**Thank You**