

NATURAL COLORANTS FOR FOOD APPLICATIONS: A REVIEW**Gurusamy K¹, M Anand², G.Amuthaselvi³, M.Balakrishnan⁴**¹⁻²⁻³⁻⁴Department of Food Process Engineering, AEC&RI, TNAU, Coimbatore**ARTICLE ID :14****Introduction**

Natural colorant has great interest in the market. Colorant are an important aspect that affect the way we feel and judge towards foods. The color of foods is normally associated with the safety, flavor and nutritional value of the products. Therefore, it is an important characteristic that give reason for colorant to be added in foods. As a natural colorant, it can replace the synthetic dyes. Since, an artificial color additive tends to impart undesirable taste, negative health issues related to their consumption such as allergenic and intolerance reactions. Food with good texture, nutrients and flavor should be of appealing color then only it can be desirable for human consumption. It is therefore, essential to explore various natural sources of food grade colorants and their potential uses. Colorants are defined as substance that modify the perceived color of objects, or impart color to other wise colorless objects. On the other hand, the term, natural means present in or produced by nature; not artificial or man-made and not altered, treated or disguised. Consequently, the term natural colorant means; substance produce by nature obtained from plant and animal that modify the perceived color of objects, or impart color to other wise colorless objects.

Importance of natural colorants

1. Consumer perception that natural is best', sociological changes and technological advances in food processing has contributed significantly to the increased in utilization of natural colorant.
2. Worldwide demand for natural colorant is increasing substantially as a result of increasing

awareness among consumers regarding the health benefit related to natural food colors.

3. Colorants obtained from plants are due to presence of tannins, anthocynins, flavonoids and other phytochemicals thus a single compound is not responsible for color of plant based or insect based dye.

A few natural colorants from plant sources

1. Carotenoids

Carotenoids are widely distributed in nature. Every form of life is considered to have carotenoids in their chemical composition and different colors can be observed from this group of pigments (e.g., red, pink, orange, yellow). Large number of carotenoid can be found in marine organisms especially marine algae (fucoxanthin). Another large source of carotenoid is green leaves (lutien, violaxanthin, andneoxanthin). Carotenoids are compound constituted by eight isoprenoid unit (ip). The ip units are joined in a head-to-tail pattern, but the order is inverted at the molecule center

2. Anthocyanin

Anthocyanin comes from Greek word anthos, a flower; and kyanos, dark blue. Anthocyanins are glycosides of anthocyanidin, aglycone possessing a fundamental skeleton of 2-phenylbenzopyrylium, known as the flavylum cation. Six important anthocyanidins are pelargodin, cyanidin, delphinidin, peonidin, petunidin and malvidin. Anthocyanin structure exhibit a great range of colors (e.g., red, purple and blue) in flower, fruits, leaves and storage organ of higher plants. Anthocyanin is common in higher plants but areabsent in some lower plants and algae. Anthocyanin concentration in most of the fruits and vegetables ranges from 0.1 to 1% in dry weight.

3. Betalains

Betalains are found indifferent plant organs and they are accumulated in cell vacuoles, mainly in the epidermal and sub-epidermal tissues. However, betalains are sometimes accumulated in plant stalks such as in the underground parts of red beet. Betalains are also present in the higher fungi Amanita, Hygrocybe, and Hygrosporus. Betalains are immonium derivates of betalamic acid.

4. Chlorophyll

The green color region of the natural eye is known as chlorophyll. This shade of green is prominent among all higher plants to perform photosynthesis. The structure of the chlorophyll



molecule consists of a coordinated magnesium molecule in the center of the cyclic tetrapyrrole. Chlorophyll a and chlorophyll b are the two pigments at the base of this vast array of different greens. Both chlorophyll a & b differ in terms of carrier molecule at position 7. Where chlorophyll a carries CH₃ while chlorophyll b contains CHO bunch.

Conclusion

In India, there is an abundant availability of dyes producing plants. Thus, by advancement in cultivation or in processing of them, large production can be achieved. Plant natural colorant is of growing business based on the increased awareness about the necessary to have non-toxic, and non-hazard chemicals as food additives. However, based on the limited natural resources, the growth of this natural colorant market will be also attributed. Therefore, natural color pigment for human wellness will grow further and need not only new discovery of new compound but also to increase the stability and ease the application of the current known compounds.