Organic Red Pigment for Dye Application

Synthetic toxic color causes adverse health and environment effect. Therefore, the global demand for natural color has increased. Natural fungal pigments are of immense importance to industries, such as food, feed, cosmetic, pharmaceutical, beverage, textile, and painting. Fungal pigment with pH and thermal stable can be utilized in food and textile industries.

In India plant source, the natural dye had been used in various application. However, the microbial source natural dye is yet to explore. At present natural pigment represents 39% of the food color market against 37% for the synthetic food dyes. Such market evolutions provide microbial pigment as an economically valuable niche with great potentialities, where further investigations are needed.

The microbial pigment can be produced by solid state and submerged fermentation technology using various organic substrates. The utilization of fruit and food processing waste from industries will reduce the cost of the substrate which represents around 70% of the total production cost. Also, production of extracellular water soluble microbial pigments are of immense importance in industries. The cost of extraction and the requirement for a nontoxic solvent for extraction is reduced. The extracellular pigment can be directly used for industrial scale dyeing process with a predetermined concentration of pigment.

Advantages:

1. The dye is a fungal pigment, i.e., natural color.
2. It can be produced in solid-state fermentation and submerged fermentation using various fruit and food industry waste. The process can be scale up in industrial scale production.
3. The extracellular pigment can be separated from fungal biomass using centrifugation or filtration. Therefore, the cost for extraction process will be reduced.
4. It can be produced using fruit and food processing waste as a substrate. So the feedstock cost will be cheaper and zero waste for fruit and food processing industries.
5. It can be directly used as liquid or crystallized to solid by drying.
6. It can be dried at 50 °C. Therefore, the product will be stable during the drying process.
7. It shows 70 to 90 % stable at 90 °C for 1 hr.
8. It shows pH stability rage from 3 to 7.
9. It shows stable during autoclaving.
10. It shows stable under UV light.
11. It also shows antioxidant properties.
12. It is water and ethanol (70%) soluble.
13. It can be produced in industrial scale fermenter. Hence, it can be available throughout the year.