

## Food Coloring: Enhancing Visual Aid and Marketability of Food

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### Abstract

The study focused on Food coloring which is any dye, pigment, or substance that provides color when it is added to food or beverages. Food colorants are also used in various non-food applications, including cosmetics, pharmaceuticals, home craft projects, and medical devices. Color psychology is being used in almost all the industries, from major brands to small businesses. Bright and vibrant color are often associated with freshness and flavor, while dull or unusual color can be unappealing. Red: energy, passion, Orange: value, appetite stimulation, Yellow: Enthusiasm, youthfulness, Green: health, freshness, nature, White: Neutrality, cleanliness, clarity. Packaging of the products in the intended categories can help in marketing of the food products. Color is the first thing people notice in a food product's appearance. The food colors market faces several challenges; Regulatory Compliance; Stability and Shelf Life; Cost Considerations; Consumer Education; Understanding of the visual perception of both foodstuffs and the food environment can now be achieved through sensory scaling and measurement using new but proven digital instrumental technology.

### Introduction

Food coloring: color additive or colorant is any dye, pigment, or substance that provides color when it is added to food or beverages. Colorants can be in the form of liquids, powders, gels or pastes. Food coloring is commonly used in commercial products and also domestic cooking. Food colorants are also used in various non-food applications, including cosmetics, pharmaceuticals, home craft projects, and medical devices. The safety of colorants is under constant scientific review and certification by national regulatory agencies, such as the European Food Safety Authority (EFSA) and US Food and Drug Administration (FDA) and also by international reviewers, such as the Joint FAO/WHO Expert Committee on Food Additives.(Wikipedia, 2024).

Color psychology is in play in almost all the industries, from major brands to small businesses.

Though customers may not be conscious about it when choosing where to eat or shop, it plays a role in influencing their decisions. Every color has symbolic meanings attached to it, and understanding the color psychology of food can help us anticipate consumer reactions and incorporate the emotions wanted to evoke into the base of the marketing plan (Philips, 2023). Bright and vibrant colors are often associated with freshness and flavor, while dull or unusual colors can be unappealing. In the culinary world, chefs use color to enhance the visual appeal of their dishes. A colorful plate of food is more enticing, leading to a more enjoyable eating experience (LLC, 2024).

### History

The colorants addition act to foods considered to have originated in Egyptian cities as early as 1500 BC, when the makers of candies added natural extracts and wine to improve the products, appearance. During the Middle Ages, the economy in the European countries were based on agriculture, and it was customary for the peasants to produce their own food locally or trade within the village communities. Under feudalism, aesthetic aspects were not considered by the vast majority of the general very poor population. This situation changed with urbanization at the beginning of the Modern Age, when trade emerged- especially the import of precious spices and colors (Wikipedia, 2024.)

### Food color Psychology

The color psychology indicates how each hue appeals to people differently (Minso, 2023 and Philips, 2023). In the food industry, these colors are most likely to feelings of

- (i) Red: Energy, passion, urgency, appetite stimulation
- (ii) Orange: Value, appetite stimulation
- (iii) Yellow: Enthusiasm, youthfulness, uneasiness
- (iv) Green: Health, freshness, nature
- (v) Blue: Calm, trust, security, appetite suppression
- (vi) Purple: Luxury, fruitiness

- (vii) Pink: Sweetness, femininity, calm
- (viii) Brown: Sweetness, nature, earthiness
- (ix) Black: Class, simplicity, luxury
- (x) White: Neutrality, cleanliness, clarity

When the colors come to food marketing, red is perhaps one of the most popular color choices

Permitted artificial food coloring in India (The Food Safety and Standard Act, 2006)

SL No.	Color	Common name	INS No.	Chemical class
1	Red	Ponceu 4R	124	Azo
		Carmoisine	122	Azo
		Erythrosine	127	Xanthene
2	Yellow	Tartrazine	102	Pyrazolone
		Sunset yellow FCF	110	Azo
3	Blue	Indigo camine	132	Indigoid
		Brilliant blue FCF	133	Triarylmethane
4	Green	Fast green FCF	143	Triarylmethane

Source - Wikipedia Foundation. 2024.

**Significance of food color**

Food colors are inherent to the food industry as it serves multiple purposes beyond aesthetics (Chakraborty, 2023):

- i. Enhanced Visual Appeal: The most obvious role of food colors is to make food more visually appealing. Vibrant colors can entice consumers and trigger their appetites.
- ii. Product Differentiation: Food colors help distinguish products in a crowded market. Unique and eye-catching colors can set one brand apart from its competitors.
- iii. Consumer Expectations: Consumers associate certain colors with specific flavors or types of food. For instance, red often signifies strawberry or cherry flavor, and green might evoke thoughts of mint or lime. Meeting these expectations enhances consumer satisfaction.
- iv. Consistency: Food colors ensure that a product maintains a consistent appearance, regardless of natural variations in ingredients.

**Purpose of food coloring**

Color additives are used in foods for many reasons including (Wikipedia, 2024):

- ✓ To make food more attractive, appetizing, interesting and informative.

- ✓ Negate color loss over time due to exposure to light, air, temperature extremes, moisture and storage conditions.
- ✓ Correcting natural alterations in color
- ✓ Amplifying the natural colors.
- ✓ Providing color to colorless and "fun" foods.
- ✓ Allowing products to be identified at sight, like candy flavors or medicine dosages.

**Color marketing**

The first thing people notice in a food product is its appearance. Proper packaging of the products can help in better marketing (Minso, 2023 and Philips, 2023).

- i. Red: This color indicates ripeness or sweetness.
- ii. Green: Green color is almost taken in synonymous with health and well-being when it comes to food.
- iii. Orange: Orange packaging provides a more affordable appearance.
- iv. Blue: Portrays trust and dependability.
- v. Yellow: Suggest original or innovative product. It also gives the idea of fun and less expensive.
- vi. Purple: Implies uniqueness.
- vii. Black: Represent luxury.
- viii. Brown: Indicates natural, wholesome or organic.
- ix. White: Indicates cleanliness, efficiency, or simplicity.

**Challenges of food color market**

The food colors market faces several challenges despite the promising trends:

- i. Regulatory Compliance: Strict guidelines regarding food color usage can limit options for manufacturers. Sticking to these regulations while meeting consumer demands for natural colors can be a challenge.
- ii. Stability and shelf life: Natural food colors are less stable than synthetic ones, therefore impacting the shelf life of products.
- iii. Cost Considerations: Natural colors are more expensive than their synthetic counterparts. Manufacturers must balance cost-effectiveness with consumer preferences which is challenging.
- iv. Consumer Education: Consumers need to be updated and educated about the pros and cons of natural food colors. Clear labeling and transparent communication are essential (Chakraborty, 2023).

**Future prospects**

The food colors market is expected to grow in the future (Chakraborty, 2023).

- i. Technological Advancements: Research and development work in progress are likely to produce improved natural food color extrication and stabilization methods.
- ii. Sustainability: Consumers are beginning to be more conscious of the environmental impact of food production, leading to a sustainable ways and production methods for food colors.
- iii. Global Expansion: As global food preferences evolve, the food colors market is expected to expand at a global scale.

**Conclusions**

Food color has advanced to be of preeminent importance to our bodies as well as to our insight, health and existence. Color and appearance make up our complete visual experience that leads through product appearance to expectations of the qualities perceived products. The color not only provide visual identity to a product but also apply a significant psychological impact on consumer insight. Therefore, the role of color in the marketing and branding of food packaging is something that cannot be ignored.as it has the ability to trigger emotions and influence consumer behavior. There is a mystique effect concerning food

color and appearance, which is commercially exploited sometimes in an unethical manner by some marketers for their benefits. Understanding of the visual perception of both foodstuffs and the food environment can be achieved through sensory balancing and measurement using new but proven digital instrumental technology.

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