

NATURAL FLAVOURS - UPDATEDS REVIEW

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ABSTRACT

Flavours play most important role in human life that's give various sensation to our body and also gives taste n smell to Pharmaceutical and Food products. So many types of flavours are available that is Natural, Artificial and Synthetic but artificial and synthetic flavours are having some adverse and side effect on body, so natural flavours are widely used due to their less side effects, less incompatibility, easy availability and its form, due to this natural flavours are safe and economic so widely used in food and pharma industry or products. In that review we study about various natural flavours and their details.

KEYWORDS: Natural Flavours, Classification, Evaluation.

INTRUCTION

Flavours^[1]

“Flavours are the substances which involve a combination of both physico-chemical and physiological actions that influence the palatability and appearance of substance by mixed sensation of smell, taste and touch.”

❖ **Why flavours are used in pharmaceuticals**

1. It imparts flavour [aroma] to the pharmaceutical product.
2. To mask off unpleasant odour or taste.
3. To overcome flavour losses caused during production, processing and storage of product.
4. To increase patient's palatability or its compliance.
5. Flavours also have emotional aspects like the smell and taste of flavour will be stored in our memory and we will recall about that medicament.
6. Some flavours also have nutritional values.
7. Flavours would may repeat purchase intent for a food product or pharma products.

❖ **What defines flavour quality?**

Desirable Sensory Attributes

- Immediate impact of identifying (expected) flavor e.g. vanilla
- Rapid development of balanced, full-bodied flavour.
- Compatible mouth feel and texture.
- Lack off foreign particles.
- Minimal after taste, i.e. clean taste.

Flavour Sensation^[2]

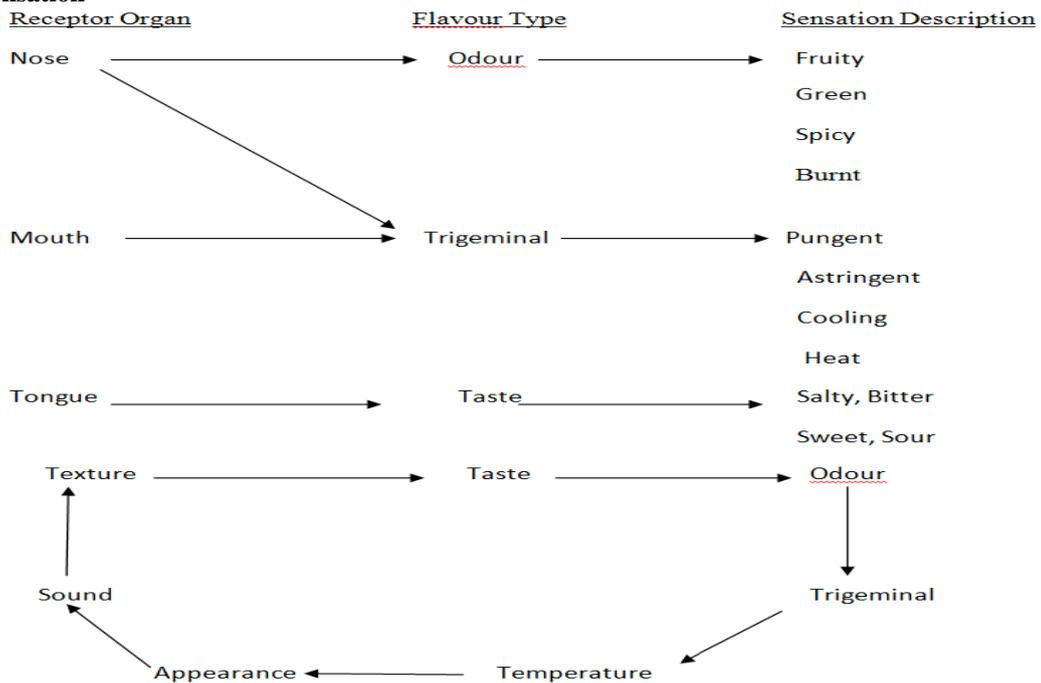


Fig. 1: Flavour sensation.

Physical Forms Of Commercial Flavours^[1]

- ❖ Liquid Flavours : Chemical aroma or dissolved in carrier solvent
 - Vegetable oil based
 - Propylene glycol
 - Triacetin
 - Ethanol
- ❖ Microencapsulated flavours
- ❖ Extracts, concentrates and pastes
- ❖ Dry blended flavours – Mixtures of dried flavours, bulions or spice/ herb powders.

Generic Flavour Creation Process^[2]

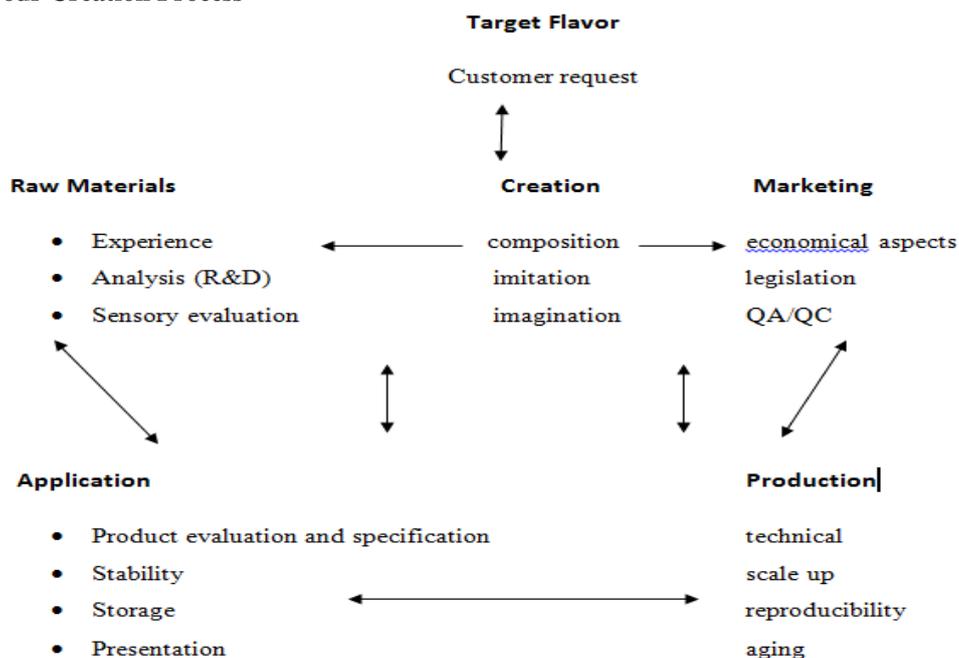


Fig. 2: Generic flavour creation process.

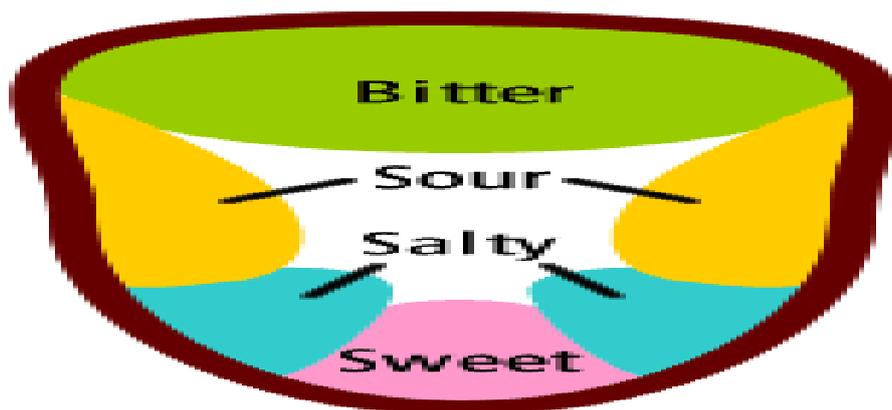


Fig. 3 Taste points in tongue.^[1]

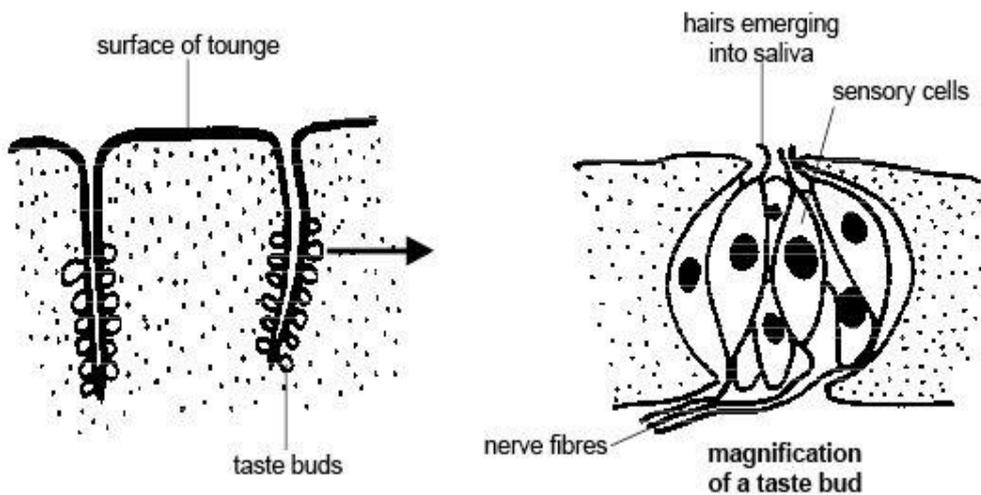


Fig. 4: Physiology of taste bud.^[1]

Classification of Flavours.^[1]

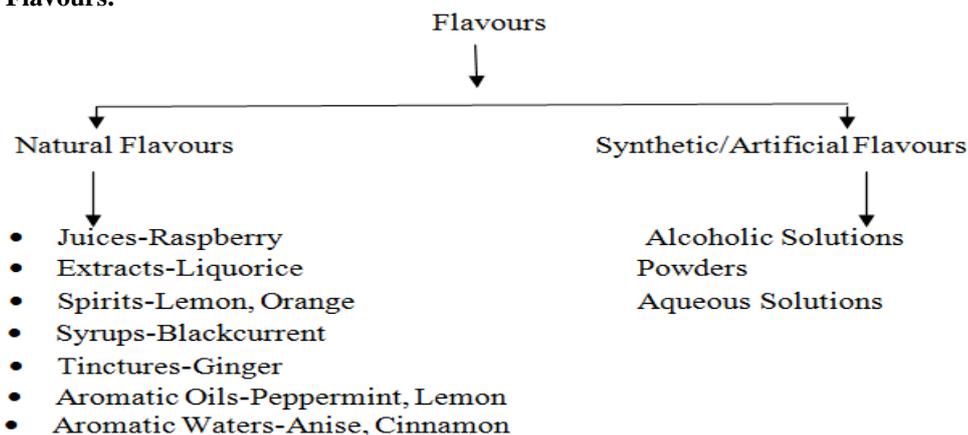


Fig. 5: Classification of flavours.

Ideal Properties of Flavours

1. Flavours must be compatible with preparation.
2. They must be non toxic, non irritant.
3. Flavours should mask bad odour.
4. Flavours should have good mouth feel.
5. Flavours should be non interferable in therapeutic activity of preparation.
6. Flavours should have intense smell.

Natural Flavours^[3]

These flavours are occurring in nature by themselves; hence they are called natural flavours. These are pure flavours without any chemicals.

Advantages of Natural Flavours

1. Natural flavours are cheaper than synthetic flavours.
2. Natural flavours are readily available than synthetic flavours.

3. These natural flavours are less chemical variable than synthetic flavours.
4. Natural flavours are more stable than synthetic flavours.
5. Natural flavours are safer than synthetic flavours.
6. Natural flavours are non-toxic and don't have side-effects.
7. Natural flavours are healthier than synthetic flavours.
8. Natural flavours are easily obtained and extracted out than synthetic ones.

Sources of Natural Flavours^[2]

- Essential oils and Aqueous Essences.
- Oleoresins, Tinctures and Extracts.

A] Two Types of Essential Oils

1. Pre-existing in sources [e.g. Citrus Oils]
2. Formed due to enzymatic reactions after maceration of sources. [e.g. Onion and Garlic oils]

B] Oleoresins, Extracts and Tinctures

- Oleoresins: gums/exudates/extracts from trees, barks and spices etc-balsams e.g. Capsicum Oleoresin.
- Tinctures: Water Infusions [e.g. Coffee]. Alcohol Tinctures- Spices[e.g. Ginger root-used in beverages]
- Absolutes: Alcohol extracts of plant substances possess the soul of flavour [e.g. Vanilla absolutes]

C] Derived Essential Oils and Flavours

E.g. Alliaceous flavour

Alliums: Garlic, Onion, Leeks

Flavour is formed via. enzymatic process in disrupted tissues and through cooking.

1. Garlic contains 0.1 to 0.25% volatile compounds, generally recovered by distillation.
 2. Other flavouring forms of garlic.
- Garlic powder/salts- prepared by dehydration of cloves.
 - Garlic oleoresins- by dehydrating garlic juice.

D] Meat and Meat derived flavours

1. Animal musk or secretions- primarily used in perfumery products.
 2. Processing animal by-products or underutilized species
- Bouillons (concentrated stocks or aq. Extracts)
 - Enzyme modified- protein hydrolysates.

Process flavourings^[2]

Flavour ingredients made by processing of precursor material.

- Enzymatic modification
 - Thermal processing
- Complex flavouring materials
- Contain flavour enhancer
 - More resemble real flavour system
 - Complex and balanced aroma

Common Type

- Hydrolyzed Vegetable Protein [HVP]
- Autolyzed yeast extracts
- Other types of reaction flavours

Hydrolyzed Vegetable Protein [HVP]

1. Produced by enzymatic, acid, alkaline, hydrolysis
2. Flavour enhancing proteins [MSG]
3. Process flavouring : cysteine, lipids and/or thiamine added to create meat like flavour

Autolyzed Yeast Extracts

1. Endogenous enzymes create flavour profile to create aroma precursors. Nucleotide provide umami flavour enhancement.
2. Contain thiamine-an important precursor to S-containing heterocyclic aroma compound.

Smoke-Based 'Reaction Flavors'

- Liquid smoke- a natural aq. Condensate of wood smoke [GRAS status]
- Early development [1880's]
- Commercially viable [early 1970s]

Controlled pyrolysis of wood components

Wood Components

- Cellulose
- Hemi cellulose
- Lignin
- Miscellaneous

anaerobic →

Volatiles

- Phenols/Guaiacols
- Acids
- Carbonyls
- Esters
- Alcohols

Biotechnology and Natural Flavors

- Crop Improvement –plant genomics and genetics
- Control and direction of microbial biosynthetic
- Cost effective, industrial scale biosynthetic production of natural flavor compounds

Development of natural processes for natural flavor production

Improve yield and quality of plant-derived flavors.

Flavourants are also selected on the basis of the taste of the drug to be incorporated³.

Table no. 1.

Taste	Masking Flavour
Salt	Butterscotch, maple
Bitter	Wild cherry, walnut, chocolate-mint, licorice
Sweet	Fruit, berry, vanilla
Acid	Citrus

Table no. 2.

Drug	Preferred flavour
1. Antibiotics	Cherry, maple, pineapple, orange, raspberry, banana-vanilla, butterscotch, coconut-custard, fruit-cinnamon, strawberry, vanilla.
2. Antihistamines	Apricot, cherry, cinnamon, grape, honey, lime, peach-orange, peach-rum, raspberry, wild cherry.
3. Barbiturates	Banana-pineapple, banana-vanilla, cinnamon-peppermint, orange, peach-orange, grenadine-strawberry.
4. Decongestants & Expectorants	Anise, apricot, butterscotch, cherry, coconut-custard, custard-mint- strawberry, grenadine-peach, strawberry-lemon, gooseberry, orange-lemon, coriander, pineapple, raspberry.
5. Electrolyte-solutions geriatric.	Cherry, grape, lemon-lime, raspberry, wild cherry syrup, grenadine-strawberry, lime, port wine, cherry wine, wild-strawberry

Above table gives information about various flavours used according to category of drug^[3]

Various Flavours

1. Blossom Flavours^[4]

- The scent of blossoming jasmine, roses smell, intense aroma of lavender was predominantly the cosmetic fragrance and the pharmaceutical industry use these properties for emotional product presentation.
- Now not only cosmetics but also foods, beverages with a small smell of rose or lavender appear.

2. Capsicum Flavour^[5]

- It is active ingredient of chili peppers. It gives high pungent effects.
 - Capsicum is used in many applications due to its pungent effect.
 - Pure capsicum is hydrophobic, colorless, odourless and crystalline to waxy compounds.
- Sources: chili pepper.
- Applications:
- Food Ingredient: Used as spice due to its heating effect it burns out excess fats.
 - Pharmaceuticals
- ⇒ Pills: weight loss due to burning effect.
- ⇒ Cream: In pain killer creams as it prevents nerves to send signaling to spinal cord.

- Preservatives: It prevents microbial growth on some materials like raw meat.
- Security Product: For girls' self protection.

➤ Industry

- Beverages: In certain energy and weight loss drinks.
- Meat industry: As preservatives.
- Food industry: As spices.
- Cosmetics: To make skin creams.

3. Citrus Flavour^[6]

- Citrus flavours find its place wisely in worldwide used beverages, food products, pharmaceuticals like syrups, liquid dosage and etc.
- The citrus flavours of orange, lemon, lime, grapefruit, mandarin and tangerine are used usually.

4. Mint Flavour^[7]

- Mint leaves and flowers have aroma. In industries mint is used as mint oil into toothpaste and other eatables.
- The mint is available in following two forms,

➤ Peppermint

Peppermint is a natural hybrid of spearmint and watermint is known for its cooling effect.

- This soothing effect is due to presence of menthol in it.
- ❖ Applications in Industry:
- ⇒ Dairy industry: Ice cream, yogurt, frozen desserts are flavoured with peppermint.
- ⇒ Beverage Industry: Many soft and hard drinks use this flavour.
- ⇒ Confectionaries: Candies, chewing gum and other eatables use peppermint flavour.
- ⇒ Toiletries: Toothpaste use peppermint as soothing effect.

➤ Spearmint:

- It is plant whose flowers and leaves are used to obtain important extract R-(-)-carvone, a cooling agent.
- It gives cooling effect in throat.

5. Pineapple Flavour^[8]

- It is one of the most popular flavour of foods and beverages.
- Pineapple flavour lozenges, syrups are available

6. Vanilla Flavour^[9]

It is flavouring dried from orchids of the genus *Vanilla* gives a brown or yellow colour to preparation depending on concentration.

- Vanilla has strong aromatic flavour.
- Main active ingredient of vanilla is 'vanillin'.

➤ Uses

- ⇒ Flavouring agent: e.g. In ice creams.
- ⇒ Confectionary: In chocolates, custards and cakes.
- ⇒ Cosmetics: To make perfume. Ethyl vanillin is more expensive but has stronger smell.
- ⇒ Medicinal uses: Used in aromatherapy.

⇒ Primary Industrial uses: Flavours for medicines, fragrances to conceal strong smell of rubber, tires, paint and cleaning products.

7. Watermelon Flavour^[10]

- This flavour is very fresh and refreshing one.
- It is found in face washes, ice creams, milkshakes and cocktails

Evaluation of Flavours^[3]

➤ For the assessment of flavours volunteers are used and they are subjected to taste tests. Each volunteer tastes three samples, two of which are the same while the other is slightly different. An acceptable volunteer must detect the odd one.

➤ Only few samples should be examined in each session because repeated testing numbs the taste buds and so raises the taste threshold. The full dose of the preparations must be taken and the experiment should be designed to minimize the effects of personal variation and other factors such as temperature, age, environment and time of the day.

➤ Finally, the stability test must be performed for the flavours used in the preparation. It should be confirmed that the flavour used is stable in the preparation and is unaffected by the container. Deterioration of flavours may be accelerated by certain factors.

CONCLUSION

From the above review work it concludes that so many types of flavours are available but artificial and synthetic flavours are having some adverse and side effect on body, so natural flavours are widely used due to their less side effects, less incompatibility, easy availability and its form, due to this natural flavours are safe and economic so widely used in food and pharma industry or products.

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