

# Adding Flavors to the pediatric tablets and Antibiotics without minimizing its medical action

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**Abstract** — The taking of tablets and capsules is more irritating because of its taste or flavor; generally, medications are more bitter. The tablets' taste or flavor depends on the ingredients of the tablets, such as the chemical contents of the tablets and capsules. With the palatability formulation improvements, the taste of tablets and capsules can change without changes in its ingredients and actions. This method provides effective medication reach ability to the children and some hated by the medications. The flavors are used to compress the bitter taste of the tablets and capsules. This approach aims to increase the effective medication for the children and some people who hate medicines.

**Keywords** — Taste masking, Taste receptors, palatability formulation, palatability antibiotics

## I. INTRODUCTION

The taking of tablets and some other medications to the children are more difficult, and the parents are irritating inconveniencing the children to take the medication. The most effective pharmaceutical medicines are bitterer because it contains more active ingredients. The coating can be used to mask the taste of tablets, or the medicines are well capsule. These methods are only suitable for the adult generation because the capsule does not dissolve easily in children's bodies. Some methods are available for this problem, either creating the barrier between the taste receptor or adding the flavored and sweetener ingredients to the medicines without degrading its action and effects on the diseases. The five tastes which are sensed by humans are sweet, sour, salt, bitter, and umami. The remaining part of this paper is discussed about the taste receptors, masking of taste, palatability formulation for masking the bitter and palatability antibiotics.

## II. TASTE RECEPTORS

Tastes are sensed to buy humans only through the tongue. The tongue consists of different taste receptors. The four basic tastes are sweet, sour, salty, and bitter. These tastes are sensed through the taste receptors in our tongue. Taste is a combination of chemicals that enables the taste receptors to sense the taste and triggers the sensory cells.



Fig.1 Taste regions of the tongue

The taste is sensed and collected as a taste bed, which contains all the taste receptors. There is a small dot associated with taste bud called taste papillae on our tongue. Papillae consist of circumvallates papillae, fungiform, and foliate. The fungiform is placed at the exterior part of the tongue, containing more taste buds. The foliate papillae are placed at the tip of the tongue, which are senses the sour tastes. The circumvallates are placed at the surroundings of the tongue, which are feeling sour and bitter. There are around 250 taste buds per papillae. The cells which support the taste sense are supporting cells, basal cells, and sensory receptor cells. The papilla creates friction between the food and tongue. The taste molecular chemical is solute with the saliva and reaches the taste pores. The brain senses the gustatory impulses through the neural network's neurons. Then the brain will compile this impulse and give the sense of the specific taste among the primary tastes.

## III. PALATABILITY FORMULATION

Some of the challenges in developing the palatability formulation are as follows

- Stability of chemical compounds
- The solubility of chemical properties
- Taste masking
- Proper selection of packaging materials



Generally, the tastes of drugs are not good because of their chemical compounds and some other pharmaceuticals. So that most of the children are not like to take the medications. The main aim of introducing the palatability is to improve the medication globally among the children generation. To make the drugs are less bitter and flavored by adding the flavor enhancers with the chemical compounds without affecting their behavior. The flavor enhancer may be natural or artificial; some of the flavor enhancers which are used for the palatability formations are cherry, peppermint, orange,

Vanilla etc. some of the criteria to develop the palatability formulation are as follows

- Improve manufacturability
- Improve solubility
- Improve palatability
- Improve the stability of physical, chemical, and microbial
- Dosage form
- Desired bioavailability

Table.1 Palatability Formulation

Ingredients	mg/unit
Taste masked oseltamivir phosphate pallets equivalent to 60mg oseltamivir base	162.25
Microcrystalline cellulose, USP	185.5
Crospovidone, USP/NF	55
Sodium saccharine, USP	31
Calcium silicate, USP	15
Hydroxyethylcellulose, USP/NF	140
Peppermint flavor	4
Magnesium stearate, USP	5
<b>Total</b>	<b>98</b>

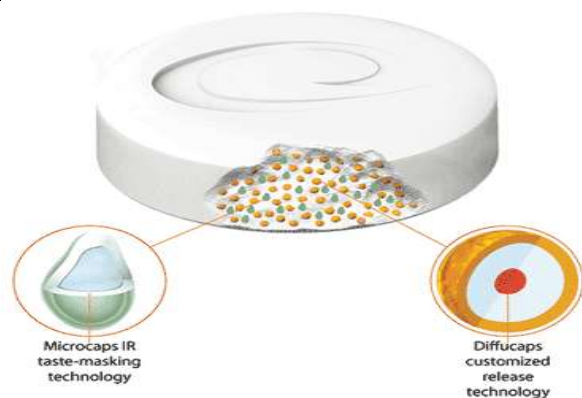


Fig.2 Taste Masking of Drugs

#### IV. Taste Masking Techniques

The Principle of taste masking technique is to mask the taste pores to avoid the sense of the bitter masking of the drug are as follows

- Adsorption
- Microencapsulation
- Gel Formation
- Pro drug approach
- Masking multiple emulsion
- Ion exchange resin
- Conventional granulation
- Polymer coating
- Resin complexation

To prevent the interaction between drug particles and taste bud, the minimum level of insoluble ingredients is added, making a delay in solving the chemical compounds in saliva. The fluidized bed coating is a good method of taste masking technique. In this process, the drug powders are heated with high-velocity air used to compress the drugs in taste-masking coating and delay dissolving the drugs in saliva. Molecular complex formations can modify the solubility of drug. The ion exchanges resins consist of hydrocarbons chain with insoluble materials are attached. Generally, sweeteners are used to add the taste in drugs, which is used with any other taste-masking technologies. The tastemakers are added with the drug compounds, which are masking the drug's bitterness as possible. Granulation is the main part of drug preparation.

#### V. TASTE MASKING EFFECTS EVALUATION

While making the taste masking, it must be considered the metabolism for the children and adults are different, and the elimination of ingredients is also different. Some of the sweetening agents which are added to the ingredients of drugs are as follows

- Sucrose
- Fructose
- Sorbitol
- Xylitol
- Aspartame

The sucrose is the most commonly used sweetening agent, which relies on glucose to the blood circulation areas. The fructose elevates the glucose content to the blood circulation. The Sorbitol and Xylitol are more or less similar, which are classified by their sugar alcohol. Both are used for making the sweeteners without calories as a sugar-free tablet (Substitute of sugar). Most of the tastes masking pediatric tablets have an ingredient of Sorbitol and Xylitol. Aspartame is a saccharide chemical compound used as a substitute for the sugar. It has low calories. Generally, the flavor is

the sense of chemical with taste and smell; most of the food items' flavor acts as the main part. The increased taste-masking ability, solubility, and bioavailability are important aspects of the bitter taste masking of drugs.



Fig. 3 Flavored tablets

## VI. CONCLUSION

The acceptability of palatability is a more challenging thing because of its risks and causes due to its ingredients. The ingredients used to mask the bitter taste of drugs are more important because the ingredients must be suitable for both the children and adults. This research aims to increase the popularity and usage of the palatability so that the medication is improved globally.

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