A Review on Taste Masking Oral Dispersible Tablets of Antihypertensive Drug

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***Abstract*: The fast-dissolving drug delivery system is rapidly gaining interest in the pharmaceutical industry among the various novel drug delivery systems. The most convenient route for drug administration for pharmaceutical dosage forms is the oral route. More than 50% of pharmaceutical products are orally administered for several Reasons, and undesirable taste is one of the essential formulation problems encountered with such oral products. According to governing compliance, the taste of a pharmaceutical product is an important parameter. Hence taste masking of oral Pharmaceuticals has become an essential tool to improve patient compliance and the Quality of treatment. In pharmaceutical oral dosage forms have unpleasant or obnoxious tastes, including bitter, sour, salt, sweet and umami tastes founded by the majority of active pharmaceutical ingredients (APIs). Taste is now one of the most important factors influencing the Quality of the product, according to therapeutic value, compliance, and acceptance of the patient. This reason is an initiative for the development of various taste-masking technologies by which the characteristics of the dosage form are improved, and good patient compliance is achieved. The present article reviews the earlier applications and methodologies of taste masking and discusses the most recent developments and approaches to bitterness reduction to give an idea about the traditional and recent taste masking evaluation techniques whereby they increase palatability for oral pharmaceuticals.**

***Index Terms*: Bitter drugs, Taste masking techniques, Ion Exchange resin, Oral Dispersible Tablets, Formulation Technologies**

I. INTRODUCTION

The taste sensation is the ability to detect the Flavour of substances like food, beverage products, and drugs. Taste is now one of the most critical parameters governing patient Compliance [1]. The Orally pharmaceutical dosage form Provide the patient compliance with many administered dosage Form, such as capsules, tablets, and granules. Conventional tablets and capsules do usually Intended to be swallowed whole. Children, older persons, and many others, including disabled patients, often have trouble swallowing tablets or capsules. It is advantageous to provide the drug either in a dissolvable solid form or in a liquid form in these situations. However, general problem associated with liquid pharmaceutical dosage forms is the often-bitter taste of a drug. Taste masking does not need to be considered in their formulation because, in the case of tablets, the drug does coat with a tasteless film coat or sweet sugar coat. In capsules, the drug does enclose within a tasteless gelatin shell. Improve palatability desire of these products has prompted the development of numerous formulations with improved performance and acceptable. The approaches most commonly involved in achieving taste-masking include various chemical and physical methods; these methods aim to mask or prevent drug taste Buds interaction [2]

II. Fast Dissolving Tablet:

Recent advances in novel drug delivery systems aim to enhance the safety and efficacy of drug molecules by formulating a convenient dosage form for administration and achieving better patient compliance [3]. One such approach is fast disintegrating tablets. The oral route remains the perfect route for the administration of therapeutic agents because the low cost of therapy, manufacturing and ease of administration lead to high levels of patient compliance. Many patients have difficulty swallowing tablets and hard gelatin capsules, and seven do not take medications as prescribed [4].

A *fast dissolving tablet* is a solid dosage form that can disintegrate into smaller granules that slowly dissolve in the mouth. The disintegration time for fast dissolving tablet varies from a few seconds to more than a minute, depending on the tablet's formulation and size. A fast disintegrating or dissolving system or tablet is a solid dosage form that can disintegrate or dissolve within 30 seconds in the oral cavity resulting in a solution or suspension without water administration. The fast disintegrating tablets are synonymous with fast dissolving tablets, melt in mouth tablets, rapid melts, Porous tablets, Orodispersible, quick-dissolving or rapidly disintegrating tablets. Their growing importance does underline recently when European pharmacopoeia adopted the term Orodispersible tablet, which means it does place in the mouth. It disperses rapidly before swallowing significance of this drug delivery system includes administration without water, accuracy dosage, easy portability, an alternative to liquid dosage forms ideal for paediatrics & geriatric patients and rapid onset of action [5].

III. CLASSIFICATION OF ION-EXCHANGE RESINS (IER):

The various ion-exchange materials available do classify based on the nature of structural and functional components and ion exchange Process. Ion exchange resins contain positively or negatively charged sites, ranking them as either cation or anion exchangers.

1. Cation Exchangers

2. Anion Exchangers

Cation Exchangers

i. Inorganic

- Natural (e.g. Modified Greensand, Clays)
- Synthetic (e.g. Zeolites)

ii. Organic

- Natural (e.g. Peat, Lignite)
- Semisynthetic (e.g. Sephadex Ion Exchangers, Zeocarb)
- Synthetic (e.g. Acrylic Acid Co-polymers, Tannin formaldehyde resin)

Anion Exchangers

i. Inorganic

- Natural (e.g. Dolomite)
- Synthetic (e.g. Heavy metal silicates)

ii. Organic

- Semi Synthetic (e.g. Sephadex Anion Exchange resin)
- Synthetic (e.g. Amine Formaldehyde resin)

IV. POLYMER MATRIX:

The familiar polymer backbone for anion exchange and strong cation exchange resin does base on polystyrene. Divinylbenzene (DVB) does include in the copolymerization for cross-linking the polymer chains. The amount of DVB, usually expressed as a percentage by weight, strongly affects the physical properties. The weak cation exchange resins generally have Poly-acrylic or Poly-methacrylic acids and DVB as cross-linking agents depending on the presence of ions. The Four major types of ion exchange resins are available, summarized in Table 1.

Table 1 Common ion exchange resin [6]

Type	Exchange Species	Polymer Backbone	Commercial resins
Strong Cation	$-SO_3H$	Polystyrene DVB	Amberlite IR 120, Dowex 50, Indion-244, Purolite C100HMR, Kyron-T-154
	$-SO_3Na$	Sodium Polystyrene	Tulsion T-344, Amberlite IRP 69, Indion 254
Weak cation	-COOH	----------	Amberlite IRC 50, Indion 204, Purolite C102DR, Kyron-T-104, Kyron-T-114, Doshion P544(R), Tulsion T-335
	$-COO^-K^+$	Methacrylic acid DVB	Tulsion T-339, Amberlite IRP88, Indion 234, Kyron-T-134
Strong anion	N^+R^3	Polystyrene DVB	Amberlite IR 400, Dowex 1, Indion 454, Duolite AP 143
Weak anion	N^+R^2	Polystyrene DVB	Amberlite IR 4B, Dowex 2

Factors affecting the selection of taste-masking technology [7]

1. The amount of the bitter taste of the API.
2. Required dose load.
3. Drug particle shape and size distribution.
4. Drug solubility.
5. Desired release profile and desired bioavailability.
6. Required dosage form.
7. Required disintegration and dissolution rate of the end product.

Properties of an ideal taste masking process [8]

1. No adverse effect on drug bioavailability.
2. Involve the least number of equipment and processing steps.
3. Least manufacturing cost and is easy to prepare.
4. It does carry out at room temperature.

5. Require a minimum number of safe excipients, have a lower cost, and are readily available.

V. MOUTH DISSOLVING TABLETS

There are various names given to mouth dissolving tablets, such as "fast-melting or melt in the mouth, porous tablet, fast-dissolving, orally disintegrating or Orodispersible". The best-suited drug candidates for this system comprise analgesics, anti-allergic, neuroleptics, cardiovascular agents, and drugs for erectile dysfunction. In Mouth Dissolving Tablets, some did design to dissolve within a few seconds after coming in contact with saliva and are known as true-fast dissolving tablets. In contrast, others contain some agents to enhance the disintegration rate of the tablet in the oral cavity. These are then more appropriately termed fast disintegrating tablets because they can take around one minute to disintegrate completely. They distinguish from lozenges, buccal tablets, and conventional sublingual tablets, which need more than a minute to dissolve in the mouth [9].

Advantages of mouth dissolving tablets [10]

- It is economical for industries and patients as well.
- It disintegrates in the mouth without chewing.
- In the case of insoluble and hydrophobic drugs, the Bio-availability of the drug enhances due to the rapid disintegration and dissolution of tablets.

Limitations of mouth dissolving tablets [11]

- Proper formulation of the tablet is necessary. It can leave unpleasant mouth feels if not done so, thus reducing patient compliance.
- Careful handling of the tablet does require due to its insufficient mechanical strength.
- Drugs with larger doses are not suitable for this type of dosage form.
- To properly stabilise the tablet, it is necessary to provide it with special packaging.

Ideal drug candidate for fast dissolving dosage forms [12]

- The taste of the drug must be pleasant; if it is not so, then it necessary to firstly mask the unpleasant or bitter taste of the drug.
- The dose should not be more than 20mg.
- Molecular weight must be small to medium.
- It must have the ability to permeate the mucosal membrane in the oral cavity.
- It must be stable in saliva and water.
- It must be able to diffuse and partition into the upper gastrointestinal epithelium.

Requirements for fast dissolving tablets

- Have a pleasing mouthfeel
- Have an acceptable taste-masking property
- It should be harder and friable
- No residuum in the mouth after oral administration
- Show low sensitivity to environmental conditions such as humidity and temperature
- Allow the manufacture of tablets using conventional processing and packaging equipment

VI. Challenges in formulating Fast-Dissolving tablets Palatability

As most drugs are unedible, FDTs usually contain the medicament in a taste-masked form. Upon administration, it does disintegrate or dissolves in the patient's oral cavity and the free active-ingredients. which live through the taste buds; hence, taste-masking of the drugs becomes critical to patient compliance [13].

Mechanical strength

The MDTs disintegrate in the oral cavity. They are either very porous and soft-moulded matrices or compressed into tablets with deficient compression force, making the tablets friable and brittle, difficult to handle, and often requiring specialized peel-off blister packing that may add to the cost. Only Wow tab and Dura-solve technologies can produce sufficiently rigid and durable tablets packaged in multi-dose containers.

Hygroscopicity

Some orally disintegrating dosage forms are hygroscopic and cannot maintain physical integrity under average temperature and humidity conditions. Hence, they need safety of humidity which calls for specialized product packaging [14].

Amount of drug

The application of technologies used for FDTs does limit the number of drugs incorporated into each single dose. For lyo-philized dosage forms, the drug dose must be less than 400 mg for insoluble drugs and 60 mg for soluble drugs. This parameter is particularly challenging when formulating fast-dissolving oral films or wafers [15].

Aqueous solubility

Water-soluble drugs produce various formulation challenges because they form eutectic-mixtures, which result in freezing-point decline and the formation of a formless that may collapse upon drying because of the loss of supporting structure during the

conversion reaction. Such collapse sometimes can be Prevent by using matrix-forming recipients such as mannitol, which can induce crystalline and hence, impart rigidity to the amorphous composite [16].

Size of tablet

The administration of a tablet depends on its size. The tablet size is both of easy to take and easy to handle is difficult to achieve. It has done reported that the most manageable size of tablet to swallow is 7-8 mm, and the most manageable size to handle is one larger than 8 mm.

VII. TECHNIQUES USED IN MDT [17]:

Following technologies have been used by various researchers to prepare mouth dissolving tablets:

- Freeze-Drying or Lyophilization
- Tablet Molding
- Spray Drying
- Sublimation
- Direct Compression
- Dry granulation
- Cotton Candy Process
- Mass-Extrusion

Freeze-Drying or Lyophilization:

Freeze drying is when water is elevated from the product after it's chilled. This technique creates a formless porous structure that can dissolve rapidly—a typical procedure in manufacturing fast-dissolving tablets. The active drug is dissolved in an aqueous solution of a carrier/polymer. The mixture did dose by weight and poured into the wells of the conducted bubble pack (blister packs). The trays holding blister packs are passed through a liquid nitrogen chilled tunnel to freeze the drug solution. Then the chilled blister packs are placed in refrigerated cabinets to continue the freeze-drying. After freeze-drying, the aluminium foil backing does apply to a blister sealing equipment. Finally, the blisters are dispatched. The freeze-drying has demonstrated improved absorption and an increase in bio-availability. The Zydis preparation consist of a drug physically trapped in a water-soluble matrix (saccharine mixture and polymer), freeze-dried to produce a product that dissolves speedily in the mouth. The ideal candidate for Zydis-technology should be chemically stable, water-insoluble, and a particle size should be less than 50 microns. Water-soluble drugs might form eutectic mixtures and not freeze adequately, so the dose is limited to 60 mg. The drug limit is 400 mg for insoluble drugs in water, as large particle sizes might present sedimentation problems during manufacture. The significant disadvantages of the lyophilization technique are that it is expensive and time-consuming; fragility makes conventional packaging unsuitable for these products, and it has poor stability under stressed conditions.

Tablet Moulding: [17,18]

The preparation of fast dissolving tablets is using Moulding techniques hire water soluble excipients so that the tablet diffuses rapidly and completely. In most cases, the active ingredients are absorbed through the mucosal lining of the mouth. The Moulding process is of two types, i.e. solvent and heat methods. The solvent method involves moistening the powder blend with a hydroalcoholic solvent followed by compression at low pressures in moulded plates to form a wetted mass (compression Moulding). The solvent is then removed by air-drying. The manufactured tablets are less compact than compressed tablets and possess a porous structure that hastens dissolution. The heat Moulding process involves preparing a suspension containing a drug, agar and sugar (e.g. Mannitol or lactose) and pouring the suspension into the blister packaging wells, solidifying the agar at room temperature to form a jelly drying at 30˚C under a vacuum. The mechanical strength of moulded tablets is a matter of great. Binding agents is increasing the mechanical strength of the tablets and need to be integrated.

Spray Drying

Spray drying is used in pharmaceutical companies to produce highly porous powders. The process solvent is evaporated rapidly by spray drying, which renders the product highly porous and used in manufacturing fast-dissolving tablets. Tablets manufactured from the spray-dried powder report disintegrating in less than 20 seconds in an aqueous medium. In this technique, gelatin does use as a supporting agent and matrix. Mannitol as a bulking agent, sodium starch-glycolate, croscarmellose-sodium, and crospovidone are super disintegrants.

Sublimation

The key to the rapid disintegration of fast dissolving tablets is preparing a porous structure in the tablet matrix. To generate a porous matrix or volatile ingredients are incorporated in the formulation that does later subjected to sublimation. Highly volatile ingredients like ammonium-bicarbonate, ammonium carbonate, benzoic acid, camphor, naphthalene, urea, urethane and phthalic anhydride have done compressed into a tablet along with other excipients. This volatile material is removed by sublimation, leaving behind a highly porous matrix. Tablets manufactured by this technique do report disintegrating in 10-20 seconds. Even solvents like cyclohexane and benzene do use as pore-forming agents. Researchers often use the vacuum drying technique to sublime the volatile ingredients and thus maximize the porous structure in the tablet matrix. Likely, a porous hydrophilic matrix will easily pick up the disintegrating medium and break quickly.

Direct Compression

There was not much attention to the direct compression of pharmaceuticals in the previous days (the late 1950s). A great deal of attention has done given to both product and process development. The availability of new materials, new forms of old materials and the invention of new machinery have allowed the production of tablets by simplified and reliable methods. In the early 1960 "s, the introduction of spray-dried lactose (1960) and Avicel (1964) changed the tablet manufacturing process and opened avenues of direct compression tableting. Previously, the word direct compression is using to identify the compression of a single crystalline compound (i.e. sodium chloride, potassium chloride, potassium bromide, Etc.) into a compact form without adding other substances. In current usage, direct compression defines the process by which tablets are compressed directly from the powder blends of active ingredient/s and suitable excipients. No pre-treatment of the powder blends by wet or dry granulation is involved. Direct compression represents the simplest and most cost-effective tablet manufacturing technique. This technique applies to fast dissolving tablets' preparation because of improved excipients, especially super disintegrants and sugar-based excipients using directly compressible excipients. Direct compression is commonly used method of preparing fast-dissolving tablets. Directly compressible excipients are very coarse and granular and give a coarse dispersion with decreased mouth feel and compliance. It is tough to prepare fast dissolving tablets with drugs having very low bulk density, higher dose and poor flow properties using this technique.

(a) Superdisintegrants:

Many orally disintegrating tablet technologies have based on direct compression. The addition of super disintegrants principally affects the rate of disintegration and hence the dissolution. The presence of other formulation ingredients such as water-soluble excipients and effervescent agents further hastens the process of disintegration. This technique contains coated crystals and micro granules along with the disintegrants. In this technology, two granules use a disintegrating agent (e.g. modified cellulose-croscarmellose sodium), which has a high swelling force, and a swelling agent (e.g. starch), which has a low swelling force. Other techniques like effervescent tablets in which the evolution of carbon dioxide aids disintegration. Saliva activates the effervescent agent, causing the tablet to disintegrate. Care is mandatory because effervescent excipients and final products require higher protection against humidity conditions.

(b) **Sugar-Based Excipients:**

It is another approach to manufacturing fast dissolving tablets by direct compression. The use of sugar-based excipients especially bulking agents like dextrose, fructose, isomalt, lactitol, lactose, maltitol, maltose, Mannitol, sorbitol, starch-hydrolysate, poly-dextrose and xylitol are high aqueous solubility and sweetness. These excipients under defined manufacturing conditions give a highly porous and friable exterior structure, which helps in the faster disintegration of fast dissolving tablets. They also provide a satisfying mouthfeel and are suitable for the preparation of more complex fast dissolving tablets by direct compression at low pressure. There was not much attention to the direct compression of pharmaceuticals in the previous days (the late 1950s). A great deal of attention does give to both product and process development. The availability of new materials, new forms of old materials and the invention of new machinery have allowed the production of tablets by simplified and reliable methods. In the early 1960 "s, the introduction of spray-dried lactose (1960) and Avicel (1964) changed the tablet manufacturing process and opened avenues of direct compression tableting. Previously, the word direct compression does use to identify the compression of a single crystalline compound (i.e. sodium chloride, potassium chloride, potassium bromide, Etc.) into a compact form without adding other substances. In current usage, direct compression defines the process by which tablets are compressed directly from the powder blends of active ingredient/s and suitable excipients. No pre-treatment of the powder blends by wet or dry granulation is involved.

Dry granulation technique

The fast-dissolving tablets do prepare through dry granulation technology, which has the following advantages over other techniques of preparation:

1. It uses all types of drugs, including moisture sensitive and heat sensitive.
2. It can be used for drugs having a very low bulk density
3. It uses for poorly compressible drugs with poor flow properties.
4. The tablets pack into regular bottles, blisters, strip packs or sachets.
5. The tablets are stored in bulk in drums. Moreover, conventional tablet packaging feeders do use for packing purposes. The dry granulation process is cost-effective as it avoids solvents and drying processes like freeze drying, spray drying, Etc.
6. This reduces the overall reduction in capital expenditure (conventional processing, packaging, and storage facilities). These dosage forms may be tablets, wafers, granules, or granules packed as other pharmaceutically acceptable additives in a suitable package that disintegrates within a few seconds upon contact with water, saliva, or aqueous solution.

Cotton Candy Process

The cotton candy process is also known as the “candy floss” process and forms the basis of the technologies such as Flash Dose (Fuisz Technology). A fast-dissolving tablet form using a candyfloss or shear form matrix forms from saccharides or polysaccharides processed into amorphous floss by simultaneous action of flash melting and centrifugal force—the matrix cure or partially recrystallized to provide a compound with good flow properties and compressibility. The candy floss can then be milled and blended with active ingredients and other excipients and subsequently compressed into fast-dissolving tablets. However, the high processing temperature limits the use of this technology to thermostable compounds only.

Mass Extrusion: [19]

This technology involves softening the active blend using the solvent mixture of water-soluble polyethylene glycol and methanol and subsequent expulsion of softened mass through the extruder or syringe to get a cylinder of the product into even segments using heated blade to form tablets. The dried cylinder can also be used to coat granules for bitter drugs and thereby achieve taste masking.

Patented technologies for mouth dissolving films [20]

- Zydis technology
- Durasolv technology
- Flash dose technology
- Oraquick technology
- Frosta® Technology
- WOWTAB® Technology
- Flashtab® Technology
- Dispersible Tablet Technology
- Quicksolv technology
- Pharmabrust technology

VIII. Taste Masking Technologies [21,22]

To achieve the goal of taste abatement of bitter or unpleasant taste of drug. Various techniques reported in the literature are as follows

i. Taste masking with flavors, sweeteners & amino acids
ii. Polymer coating of drug
iii. Formation of inclusion complexes
iv. Ion exchange resin complexes
v. Solid dispersion
vi. Microencapsulation
vii. Multiple Emulsions
viii. Development of Liposome
ix. Prodrug approach
x. Taste masking by adsorption
xi. Taste Masking with Lipophilic Vehicles like lipids and lecithins
xii. Taste Suppressants and Potentiators
xiii. Taste masking by gelation
xiv. Formation of salt and derivative
xv. Use of Amino Acids and Protein Hydrolysates
xvi. Miscellaneous.

- By effervescent agents
- Rheological modification
- Continuous multipurpose melt (CMT) technology
- Wet Spherical Agglomeration (WSA]

IX. EVALUATION OF TASTE MASKING

Sensory evaluation

Taste, or to think of it, is a very subjective perception. Depending on individuals, the perceived taste may vary to different degrees. The following methods have been reported in the literature to evaluate taste sensation quantitatively.

1. Panel testing (human subjects)
2. Measurement of frog taste nerve responses.
3. Multichannel taste sensor/ magic tongue
4. Spectrophotometric evaluation/ D30ís value [21]

A. In vivo Evaluation

1. **Panel testing (human subjects)** The panel testing is a psychophysical rating of gustatory stimuli. In vivo taste evaluation was carried out on a trained taste panel of 5-10 healthy volunteers with organoleptic senses, with their prior consent. On placing the dosage form in the mouth for 60 seconds, bitterness counts against pure drug using a numerical scale. The numerical scale may Bears values as 0 = pleasant, 1 = Tasteless, 2 = No bitter but after taste give bitterness, 3= immediately gives bitterness, 4 = slightly bitter, 5 = extremely bitter. In vivo assessment usually demands large panels, and detailed analysis raises safety scheduling issues and can be time consuming and expensive. [21,23]

Measurement of Frog Taste Nerve Responses: In this method, adult bullfrogs are anaesthetized intraperitoneally, and the glossopharyngeal nerve is then located and dissected from the surrounding tissue and cut proximally. An ac-amplifier and an electronic integrator do use to amplify and integrate the nerve impulses, respectively. The peak height of the integrated response does take from the magnitude of the response. [21,24]

B. In vitro Evaluation

1. **Multichannel Taste Sensor / Magic tongue**

The invention of ìE-Tongueî electronic sensor array technology overcomes this problem, a device for recognition, quantitative multicomponent analysis and artificial assessment of taste and flavour. It recognizes three levels of natural taste, including receptor level (Taste buds in humans, probe membranes in E-Tongue), circuit-level (neural transmission in humans, transducer in E-Tongue), and perceptual level (cognition in the thalamus in humans, computer and statistical analysis in the E-Tongue). The probes consist of a silicon transistor with proprietary organic coatings, which govern the probeís sensitivity and selectivity, and measurement has done potentiometrically. Each probe is cross selective to allow the full taste profile coverage, and statistical software interprets the sensor data into taste patterns. Liquid samples are directly analyzed without preparation, whereas solids require a preliminary dissolution before measurement. Reference electrodes and sensors dip in a beaker containing a test solution for 120 seconds (fig. 1). A potentiometric difference between each sensor and a reference electrode was measured and analyzed by the E-Tongue software. [23] Quinine hydrochloride did take as the standard for bitterness. [24] Essential drugs with amino groups in the molecule, such as quinine, show a comparatively good correlation between the relative response electric potential (mV) of channels 1 or 2 of the taste sensor, which contain negatively charged membranes, and the bitterness as determined by human gustatory sensations tests. [22] These data represent the input for mathematical treatment that will deliver results. The E-Tongue enables us to test taste accurately without the need for human volunteers at earlier stages of drug development. Furthermore, the E-Tongue does poison and fatigue or lose its sense of taste after long testing periods. The bitterness of drugs and their compatibility with taste-masking agents do not affect the bioavailability of drugs [23]

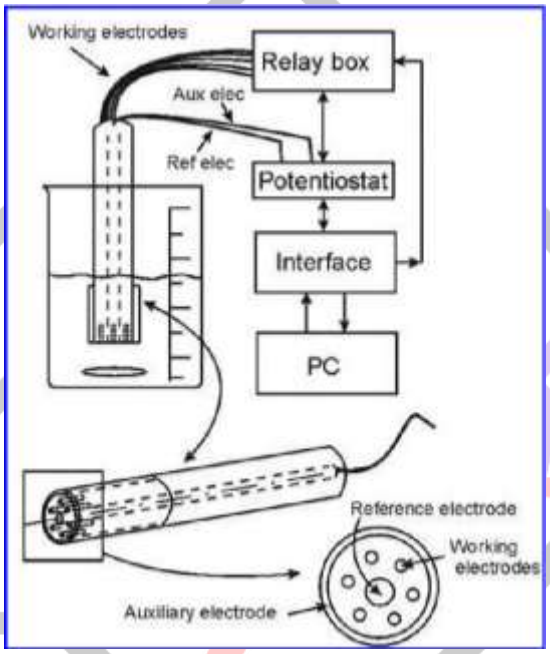

Fig 1: Evaluation of taste using e-tongue

Spectrophotometric Method

A known quantity of the taste-masked formulation (DRC) is mixed with 10 ml of distilled water in a 10 ml syringe by spinning the syringe, end to end, five times in 30 seconds. The test medium filters through a membrane filter, followed by a spectrophotometric method the determination the concentration of the filtrate drug. If this concentration is below the approach concentration, it does conclude that the bitter Taste will mask in vivo. This technique does apply to evaluate the taste-masked granules of sparfloxacin, with the threshold concentration being 100Ïg/ml. [21,24] Generally, the taste evaluation involves the objective or analytical method and the subjective or hedonic method. [22]

Evaluation of mouth dissolving tablet [25,26]

Hardness: Monsanto or Pfizer tester does use to determine the hardness of the tablet. Wetting time: In a petri dish, 5ml of water took a piece of twice folded tissue paper. On this tissue paper, a pre-weighed tablet did place, and the colouring of the tablet characterized the time required for complete wetting.

Friability: Roche friabilator did use to determine the friability of the 20 tablets. The pre-weighed tablets are placed in a friabilator and then rotated at 25 rpm for 4 min. These operated tablets were dusted and reweighed. The compressed tablets should not lose more than 1% of their weight. The % friability is given by

% Friability = (Initial Weight – Final Wright) / Initial Weight x 100

Weight variation: 20 tablets are randomly selected and weighed individually to determine weight variation. According to IP weight variation specification is given in Table No.2.

Table No.2: IP Weight Variation Specification of Fast Dissolving Tablet

S.No.	Average Tablet weight	% deviation
1.	80 mg or less	±10
2.	80-250 mg	±7.5
3.	250 mg or more	±5

Disintegration test: The standard procedure of the disintegration test has to be modified as disintegration does require water. The test must mimic disintegration in the mouth within saliva. It should be less than 1 min.

Modified disintegration test: A tablet was placed carefully at the centre in a petri dish containing 10ml of water. The time is a note to disintegrate the tablet into fine particles ultimately will be determined.

Dissolution study: The dissolution study for mouth dissolving tablets is similar to that of conventional tablets using USP dissolution apparatus 2 (paddle type) at 25-75 rpm. The pH of Buffers 4.5 and 6.8, 0.1N HCl, should be used to evaluate these tablets.

Packaging of fast-dissolving tablets: During the manufacturing and storage of fast dissolving dosage forms, expensive packaging, specific processing, and special care does require to protect it. There are various options for packaging these dosage forms, like blister cards with multiple units, single pouch, multiple-unit dispensers, and continuous roll dispensers; these depend on the application and marketing objectives.

X. Conclusion

Scientists challenge the Taste masking of bitter drugs. We have an attempt to describe various methods which could be suitable for Taste masking of bitter drugs. Several technologies are available that effectively mask the objectionable Taste of drugs but require a handy application that does not affect the bioavailability of drugs. With the application of these techniques and proper evaluation of the taste masking effect, one can improve product preference to a large extent. Fast dissolving tablets (FDTs) are innovative drug delivery systems and have potential advantages over conventional dosage forms, with their improved patient compliance, convenience, bioavailability and rapid onset of action. These patient compliant tablets that have a good taste and rapidly disintegrate in the mouth are helpful and practical for pediatric and geriatric formulation. Thus, we can achieve our objective of preparing FDTs of Drugs to increase their dissolution by its faster disintegration.

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