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ORAL WAFERS: A NOVEL APPROACH OF FAST DRUG DELIVERY

Sanket D. Badkhal*, Dr. Pankaj M. Pimpalshende, Dr. Satish B. Kosalge
Hi-Tech college of Pharmacy, Padoli, Chandrapur (M.H)

Abstract:
Oral fast disintegrating wafers are a relatively new type of dosage form. They are made thinly with water soluble polymers and quickly dissolve on the tongue or in the buccal cavity. Pharmaceutical technology research has advanced because to wafers' capacity to transport drugs for systemic action through the oral mucosa without causing hepatic metabolism disturbances. An overview of oral wafers, including their composition, classification, mechanism, formulation, evaluation factors, natural polymers that can be utilized to make wafers, and some previously developed antiemetic medication wafers are provided in this review study.
Keywords: Oral wafer, *Fast Dissolving Delivery System, Natural polymers*

Corresponding author:
Sanket D. Badkhal,
Hi-Tech college of Pharmacy, Padoli, Chandrapur (M.H)
Email: sanketbadkhal@gmail.com

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INTRODUCTION:

In the era of rapid Dissolving Delivery Systems (FDDS), the polymer-based rapid dissolving wafer represents a significant advancement. Pharmaceutical technology research has advanced because to wafers' capacity to transport drugs for systemic action through the oral mucosa without causing hepatic metabolism disturbances. It may become difficult to swallow a tablet or capsule in certain situations, such as motion sickness, an allergy attack, coughing, and a lack of fluids. Many fast-dissolving drug delivery devices have been created in order to help these patients (Patiland Daswadkar, 2020).

Scientists have created new oral fast disintegrating dosage forms, such as the "Fast Disintegrating Wafer," which offers the combined benefits of ease of dosing and convenience of dosing without water, in order to get around these challenges and provide high patient compliance. The oral fast dissolving wafer is a relatively new dosage form that dissolves quickly on the tongue or in the buccal cavity. It is made of a thin wafer made of water soluble polymers (Hassan *et al.*, 2016).Oral Fast Disintegrating Wafer is also referred to as Oro-dispersible films (ODF), mouth dissolving films (MDF), and oral strips. Saliva helps to quickly dissolve the dosage form when mouth dissolving films are placed in the mouth. After swallowing the saliva containing the dissolved or scattered medication, the medicine is absorbed normally. Certain medications may have a quick start of action because they are absorbed from the mouth, throat, and esophagus as saliva travels down to the stomach. In these situations, the drug's bioavailability is noticeably higher than it is in dose forms of traditional tablets (Nagar *et al.*, 2011).

Patients can obtain wafer products for the instant release of several APIs. Particularly in cases of acute pathologies or symptoms, the majority of these medications demonstrated improved patient compliance. For example, acute migraine attacks frequently cause nausea, which calls for parenteral medicine to prevent vomiting. Similar to conventional subcutaneous sumatriptan, pain subsides 20 to 30 minutes after the medicine is administered thanks to the development of Rizatriptan wafers. Patients prefer rizatriptan due to its quick start of action, oral consumption, and comparable efficacy pattern, even though it is only 45% bioavailable compared to 95% for subcutaneous sumatriptan (Evans and Mathew, 2005). Fast-disintegrating antiemetics, such as domperidone and ondansetron, have acquired widespread acceptance as effective treatments for migraine episodes and other medical disorders by preventing nausea and vomiting. Ondansetron administered orally was equally effective as administered intravenously in preventing emesis during laparoscopic cholecystectomy (Grover *et al.*, 2009).

Classification of oral wafer and their characteristics

Mucoadhesive sustained release wafers

- Dimensions: 2-4 cm^2.
- DIMENSIONS: 50–250 µm.
- Dissolution: 7-8 hours.
- A multi-level arrangement.
- Low solubility excipients are utilized.
- There is utilization of non-soluble polymers.
- Medicines are dissolved in suspension or solid solution.
- The gingival or oral cavity receives its application(Hanson, 2021).

Mucoadhesive melt away wafers

- Dimensions: 2-7 cm^2
- Thickness: 50-500 µm.
- Dissolve in 1-3 minutes.
- A single layer or several layers.
- There is utilization of soluble excipients.
- Polymers that are hydrophilic are needed.
- Medicines are dissolved in suspension or solid solution.
- The buccal or gingival area receives its application (Sushmitha *et al.*, 2014).

Flash release wafers

- Dimensions: 2–8 cm^2.
- Measurements: 20–70 µm.
- Dissolution: up to 60 seconds.
- One level of structure.
- There is utilization of soluble excipients.
- It is necessary to use very hydrophilic polymers.
- The solid solution phase is where drugs are distributed.
- It is placed to the tongue's upper palate (Chougule *et al.*, 2023).

Mechanism action of wafers

Wafers are applied to a person's tongue or any other oral mucosal tissue. Saliva immediately hydrates and breaks the film, releasing the medication for mucosal absorption due to the inclusion of hydrophilic polymer and other excipients (Dey and Ghosh, 2016). The development of fast-dissolving drug delivery devices began in the late 1970s as a substitute for conventional dose forms for children and elderly patients. These systems are designed to quickly dissolve or break down in saliva, frequently in less than 60 seconds (Masih, 2017).

Components of wafer

Drug or API

Typically, films might include between 5 and 30% API. The film contains water-soluble APIs in a dissolved condition. Micronized API will enhance the film's texture and promote improved homogeneity and dissolution in the film (Reddy, 2020)

Surfactant

In the formulation, it serves as a solubilizing, wetting, and dispersing agent, allowing the wafer to dissolve quickly and release the active ingredient. Benzalkonium chloride, benzethonium chloride, sodium lauryl sulphate, and others are surfactants that are often employed (Joshua *et al*., 2016).

Plasticizers

The plasticizers that are utilized need to be compatible with both the type of solvent that is being used and the polymer. It is included in the formulation up to 20% (w/w). It lessens the brittleness and increases the strip's flexibility. It lowers the polymer's glass transition temperature to below 75 °C for aqueous systems and between 40 and 60 °C for non-aqueous solvent systems. Wafers may, however, break, peel, and crack if plasticizers are used improperly. There are reports that suggest the drug's absorption rate could be impacted by the usage of specific plasticizers. Plasticizers like glycerol, dibutyl phthalate, polyethylene glycols, etc. are frequently utilized (Jurulu, 2013).

Sweetening Agents

Sweeteners are crucial in enhancing pediatric population compliance with wafers.Traditional sources of sweeteners include glucose, sucrose, and dextrose (Karthik *et al*., 2021).

Colour

There is an extensive selection of colors accessible, such as FD and C colors, EU colors, and natural colors(Lynthong, 2022).

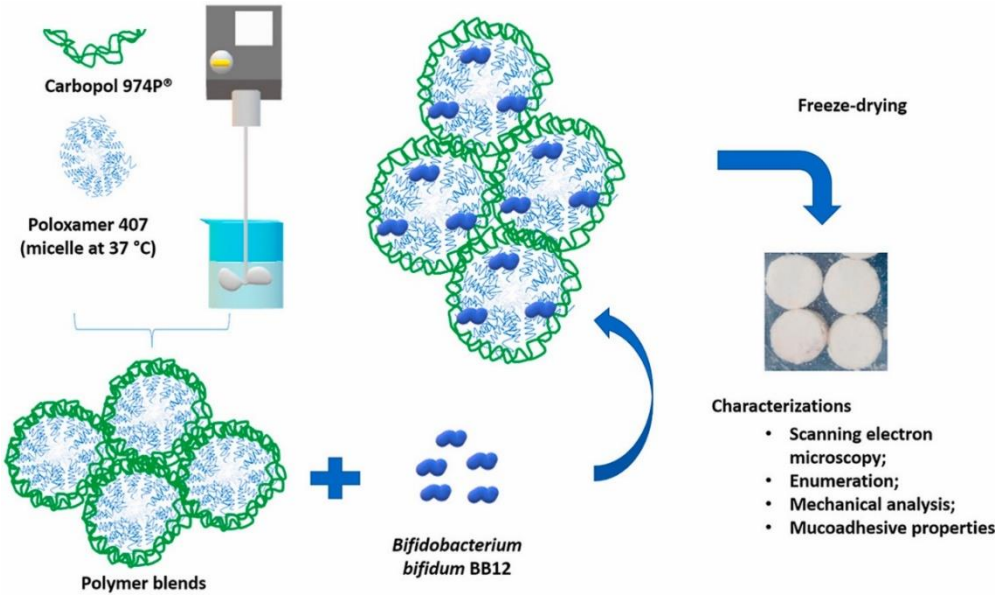

Figure 1: Process of forming wafer

Stabilizing and thickening agents

In order to improve the viscosity and consistency of the film preparation dispersion or solution before casting, stabilizing and thickening agents must be added. Natural gums including xanthan gum, locust bean gum, carrageenan, and cellulose derivatives are examples of thickening and stabilizing agents. They can be used at up to 5%w/w concentrations (Bhyan *et al*., 2011).

Saliva-stimulating agents

The goal of using saliva-stimulating drugs is to increase salivary flow, which will help the fast-dissolving strip formulations dissolve more quickly. Generally speaking, salivary stimulants can be made from acids that are used in meal preparation. Among these are tartaric acid, lactic acid, ascorbic acid, malic acid, and citric acid. These substances are used singly or in mixtures that range from 2 to 6%w/w of the wafer's weight (Patiland Shrivastava, 2014).

Wafer forming polymer

It is possible to use polymers by themselves or in combination with other materials to give films the desired properties like mouth feel, hydrophilicity, flexibility, and solubility. As the molecular weight of the polymer film bases rises, the rate of polymer disintegration decreases.

Established parameters of formulation variable
Type of Mould
Getting the wafers out of the molds without damaging their fragile structure was a significant challenge. The best-performing trays were made of polystyrene, which deformed the finished product the least since the molds were simple to break down the middle to extract the wafer.

Type of Lubricant
As was already noted, it was difficult to remove the wafers from the mold. In contrast to other substances like maize oil, mineral oil imparted negligible hydrophobicity and had no effect on the finished product's taste, making it the most easily removed from the product among the lubricants examined (Vibhooti and Preeti, 2013)

Freeze-Drying
After a day, the wafers seemed to be dry, but during storage, the matrices "melted" and were discolored. This was explained by the moisture found in the products, which suggested that a longer freeze-drying process was required. This was expanded to 48 hours in subsequent procedures (Chopade, 2023).

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Concentration of Diluent
The diluent's concentration would have an impact on the matrices' textural characteristics and solubility. 1%w/v and 5%w/v, respectively, were found to be the lower and upper bounds. The wafer was very frail and powdery when the lactose concentration exceeded 5%w/v (Joshi*et al*., 2022).

Advantages of wafer
• High dissolution because of a broad surface area;
• No first pass effect.More patient compliance
• Limited effect on the digestive system;
• Only low doses can be used.
• Effortlessly applied and discrete;
• More robust than orally disintegrating tablets;
• choking hazard-free;
• enhanced bioavailability;
• translates to a reduced dosage

Method of preparation
Conventional methods

Hot melt extrusion
There are several advantages to the hot melt extrusion technology, including reduced operation units, less product waste, improved content homogeneity, anhydrous processing, and no need for organic solvents. Drug and carriers are combined in a solid state. The mixture is melted by the extruder's heaters. Ultimately, the dies form the melt into films (Janiand Patel, 2015).

Freeze-dried wafers
Deionized water was combined for 45 minutes with a polymer at 1% (w/w) concentration and lactose at 6% (w/w) concentration as a bulking agent. The cylinder cavities were pre-oiled with mineral oil, and 1.5 ml of each of the different polymer solutions was pipetted out. The formulation underwent two hours of freezing at -60°C in a freeze-dryer, followed by a 24-hour dying phase at 25 mTOR of pressure. Glass jars containing two grams of desiccant sachets held the wafers (Adel*et al*., 2021).

Solvent casting method
Solvent casting is the preferred process for formulating fast dissolving films, as it allows the water soluble The medication and other ingredients are dissolved in an appropriate solvent to create a clear, viscous solution. The mixture is then combined and swirled before being poured into a petri dish and allowed to dry. Ingredients that are soluble in water are dissolved in water, and agents such as API are dissolved in an appropriate solvent (Lade *et al*., 2013)

Rolling method
A drug-containing solution or suspension is rolled onto a carrier. Water or an alcohol-water mixture makes up the majority of the solvent. After being dried on the rollers, the wafer is sliced into the required sizes and shapes. Additional substances, such as active compounds that were processed with high shear in a little amount of aqueous solvent. A homogenous, viscous solution is created when water-soluble hydrocolloids are dissolved in water (Timur *et al*., 2019).

Non -conventional method
Inkjet Printing
By applying ink droplets to specific surfaces, inkjet printing is a computer printing technique that creates three-dimensional objects from digital images developed on a computer.
Regarding pharmaceutical applications, inkjet printing can be divided into two main categories: i) Continuous Inkjet Printing (CIP) ii) Drop on Demand Printing (DOD) A transducer or a droplet-loading device that emits a continuous stream of droplets

creates the drops in the CIP process. The droplets are then guided toward an electrically charged element in order to obtain the desired charge. The final 3D product is created when the generated droplets come into contact with the substrate. In DoD printing, voltages cause droplets to form in several nozzles because they alter the structure of a piezo-electric material in the ink chamber, creating a pressure wave in the ink (Guo *et al.*, 2017).

Flexographic printing technique

The contact printing principle is the foundation of flexographic printing technology. The ink in this printer, which comprises API in suspension or solution form, is transported to an Anilox Roller via a fountain roller. With the help of this roller, you can precisely calculate how much ink is needed to provide the plate cylinder which has a polymeric strip inside—a uniform thickness. Ink is applied to the polymeric strip by means of pressure. However, flexographic printing is challenging to utilize in the pharmaceutical sector since it requires an organic solvent (in a higher ratio) for drug solubilization and has an inherent risk of precipitation and activity loss. Furthermore, it is imperative to guarantee that the utilization of these techniques does not modify the medicinal or physicochemical characteristics of the pharmaceutical product (Turković *et al.*, 2021; Karki *et al.*, 2016).

Evaluation of wafer

Appearance, Size and Shape: The thickness, shape, and look of the formed wafer were examined. Using a digimaticmicrometer, the thickness of the wafer was measured twice, and the mean value was computed (Sumedha *et al*., 2014).

Color: It need to be appealing and encourage patient cooperation.

Weight:A mass variation analysis was conducted on the wafer by weighing randomly selected patches on an individual basis. Each batch's average of five observations was determined. The same is carried out for every batch (Naga, 2013).

Disintegration time: The amount of time (measured in seconds) that a wafer splits when it comes into contact with saliva or water is known as the disintegrating time. Wafers often disintegrate in 5 to 30 seconds.

Thickness test:A calibrated digital micrometer is used to measure thickness, and mean average is then computed. Typically, three readings are taken from each batch, and an average is computed. For dosage accuracy, thickness uniformity is crucial (Ramesh*et al*., 2016).

Dissolution time: Calculations are made to determine the cumulative drug release and cumulative drug percentage. Drug dissolving in vitro is accomplished with the use of USP paddle-style equipment. The investigations were conducted in 900 cc of phosphate buffer (pH 6.8) at 37°C and 75 rpm of stirring speed. At the scheduled intervals of 2, 4, 6, 8, and 10 minutes, 5 ml of the samples are removed and replaced within the same volume of buffer. Using a UV-visible spectrophotometer, the samples were collected and the concentration was calculated at the proper wavelength.

Folding endurance:to calculate a wafer's mechanical characteristics. A wafer is folded repeatedly at the same spot until it breaks to determine the measurement. The wafer's folding endurance value is the number of folds it can withstand without cracking. A wafer with a higher folding endurance rating has more mechanical strength. It is obvious that plasticizer concentration, which controls mechanical strength, also has an indirect impact on folding endurance value (Boateng *et al*., 2015).

Swelling property

A simulated saliva solution is used to examine wafer swelling. After being weighed, the wafer sample is put through a stainless steel wire mesh. The wafer sample-containing mesh is immersed in a 15 ml medium within a plastic container. Weight increases for the Wafer are measured at pre-arranged intervals until a stable weight is attained.

Stability test

For four to twenty-four hours, a wafer preparation piece was kept in an aluminum box at 25 0C and 50–60% humidity (regular condition) or 40 0C and 75% humidity (accelerated condition).

Percent Elongation

Strain is the term used to describe the wafer sample's stretching under stress. In essence, strain is the strip's deformation divided by the sample's initial dimension. In general, wafer elongation rises with increasing plasticizer content (Nagesh *et al*., 2016).

Tear Resistance

Plastic's resilience to tears the intricate function of a wafer's or sheeting's ultimate resistant rupture. In essence, an extremely slow loading rate of 51 mm (2 in)/min is used to gauge the force necessary to start tearing. The tear resistance value in Newtons (or pounds-force) represents the maximal stress or force needed to rip the specimen, which is often obtained close to the beginning of tearing.

Drug content uniformity

The strip was dissolved for 24 hours at room temperature with the stirrer maintained at 37 °C for

three hours. It was then placed in a 100 ml volumetric flask filled with 100 ml of phosphate buffer pH 6.8. To ascertain the average drug content, the filtered solution was diluted and put through a triple UV-VIS spectrophotometer measurement (Mohammad *et al*., 2015).

Table 1: Some marketed wafers

Name of product	Manufacturer
Suppress Cough Strips	InnoZen
Theraflu Thin Strips Long Acting Cough	Novartis
Little Colds Sore Throat Strips	Prestige Brands
Gas-X(Simethicon), Triaminic	Novartis
Altoid cinnamon strips, Boots vitamin C strips, Benzocaine films, Caffeine film	Dow chemical company
Sudafed(Phenylephrine)	Wolterskluwer health, Inc

(Costa *et al*., 2019)

Use of natural polymers in preparation of wafer

The utilization of several natural polymers, including the newest nanomaterials, as drug delivery vehicles in the pharmaceutical industry has received a lot of attention lately. Natural polymers are known as natural biodegradable polymers because of their remarkable erosion and breakdown behaviors4. Enzymes created by surrounding living cells or implanted in vitro have the ability to erode or dissolve these. Because many naturally occurring polysaccharides are biocompatible and biodegradable, they can be used as effective medication carriers (Kulkarni*et al*., 2012). Another benefit of natural polymers is that they present fewer toxicity issues on their own. Yet depending on their origins and methods of extraction and purification, biopolymers can also vary in their relative molecular mass as well as in their physical and chemical characteristics to variable degrees (Alam *et al*., 2014)

Classification of gums and mucilages:

The many gums and mucilages that are available can be categorized in the following ways:

According to the charge:

• Guar, locust bean, tamarind, xanthan, amylose, Arabians, cellulose, and galactomannans are examples of non-ionic seed gums.

• Anionic gums: pectin acid, agar, Arabic, Karaya, tragacanth, gellan, and carrageenan.

According to the source:

• Algal (seaweed) gums of marine origin: laminarin, agar, carrageenan, and alginic acid

• Origin of the plant:

- Exudates from shrubs and trees: gum arabica, gum ghatti, gum karaya, gum tragacanth, khaya, gum albizia, etc.
- Seed gums: starch, cellulose, amylose, locust bean gum, guar gum, etc.
- Extracts: larch gum, pectin.
- Potato starch is the root and tuber.

• derived from animals: chondroitin sulfate, hyaluronic acid, chitin and chitosan.

• Microbial origin (fungal and bacterial): emulsan, zanflo, pullulan, curdian, xanthan, and dextran (Jani, 2009).

According to shape:

- Algae, cellulose, amylose, and pectins are linear.
- Branched: Xanthan, xylan, and galactomannan are examples of short branches.
- Branch-to-branch: tragacanth, gum Arabic, and amylopectin.

According to manomeric units in chemical structure:

Diheteroglycans: algins, carragennans, and galactomannans; homopolycans: amylose, arabinanas, and cellulose (Shirwaikar*et al*., 2008).

Description of some commonly used natural polymer in preparation of wafer

Gellan gum

Gellan gum is a naturally occurring polysaccharide that comes from bacteria and has the potential to be used in this field because of its biocompatibility and adaptability. The repeating unit of gellan gum is a tetrasaccharide consisting of two d-glucose residues, d-glucuronic acid, and lrhamnose. Like other polysaccharides, lysozyme released by neutrophils and monocytes has the ability to break down the backbone. Modifying the kind and strength of cross-links can change mechanical properties, much as modifying degradation profiles. Gellan gum gels can be cross-linked with cations by charge-shielding the polymer chains, encouraging physical cross-links, and encouraging aggregation. Specifically, multivalent cations reduce electrical repulsion by bridging carboxyl groups. Although gellan molecules can be charged-screened by monovalent cations, this contact is far weaker than that of ionic bonds produced by carboxylic acids and divalent cations. Because monovalent cations replace divalent cations at far higher quantities in vivo, physically cross-

linked gellan gum hydrogels will thus lose their physiological stability (Osmałek *et al*., 2014; Ahuja *et al*., 2013)

Gelatin

Collagen is extracted from animal and fish skins and thermally denaturated to create gelatin. The name "gelatin" refers to a mixture of pure protein fractions that are derived from partial animal collagen hydrolysis—type Agelatin—or partial animal collagen hydrolysis—type B gelatin—or from a combination of the two. The majority of the protein fractions consist of linear polymers, which are composed of amino acids joined by amide bonds. Up to the 1960s, there was a great deal of study done on the use of mammalian gelatin to create edible films or coatings, which led to the issuance of several patents, mostly in the pharmaceutical industry. But in the year 2000, academics once again became interested in fish gelatin-based gelatin films. It was found that gelatin films had a smooth tongue feel, dissolved rapidly, and made good flavor carriers (Bangar *et al*., 2014; Palumbo *et al*., 2020).

Mango gum

A dried, sticky polysaccharide called mango gum is extracted from the bark of the Mangiferaindica tree, which belongs to the Anacardiaceae family. Mangiferaindica gum has been investigated as a binder in a tablet containing paracetamol, serving as a model medication. In the formulation development of sustained release Diclofenac sodium tablets, mango gum was also investigated as a drug release retardant polymer. Using this gum, mouth dissolving tablets were also investigated (Malabadi *et al*., 2021).

Sodium alginate

The sodium salt of alginic acid, a polyuronic acid combination consisting of residues from D-mannuronic and L-guluronic acids, is the main component of sodium alginate, a naturally occurring polymer. Brown seaweeds (Phaeophyceae, mostly Laminaria) produce alginate, an indigestible biomaterial. The calcium, magnesium, and sodium salts of alginic acid are present in the cell walls of brown algae. Alginate has the ability to generate a biopolymer film or coating component due to its special colloidal capabilities, which include thickening, stabilizing, suspending, film forming, gel generating, and emulsion stabilizing (Kulkarni et al., 2010). Alginate-based edible films are robust but have low water resistance due to their hydrophilic nature. The mechanical characteristics and water permeability are deemed modest in comparison to synthetic films. An alginate film's mechanical characteristics can be enhanced with starch (Islama *et al*., 2011)

Plantain

Banana dried bananaow (pBP) is also known as a plantain. It is a member of the Musaceaeam family and is produced from the banana cultivars ethan and nenthran (nenthravazha). Because it includes vitamin A, it is used to cure diarrhea and stomach ulcers. Additionally, it has vitamin B6, which lessens anxiety and tension. It is a very good source of energy due to its high carbohydrate content, and it contains potassium, which is responsible for more significant brain activity (Singh *et al.,* 2014).

Aloe mucilage:

Aloe barbadensis leaves are used to make aloe mucilage. The exudates from the cells next to the vascular bundles and aloe vera leaves are employed. The 1, 8 dihydroxyanthraquinone derivatives and their glycosides are present in the bitter yellow exudates.16 Researchers looked at an aloe mucilage-based controlled administration method for glibenclamide. By using the direct compression approach, several glibenclamide formulations including the mucilage of Aloe barbadensis Miller leaves were created. It was discovered that matrix tablets containing aloe mucilage had lower statistical variation and improved weight and drug content consistency.

Gum karaya

It's a gum made of vegetables that is secreted by Sterculia trees. The acid polysaccharide gum karaya is made up of galactose, rhamnose, and galacturonic acid. It is a laxative, an emulsifier, and an adhesive for dentures that are used in food. Gum tragacanth is also adulterated with it because of its physical similarities. The Sterculiaurens tree is the source of gum karaya. Because gum karaya is inexpensive, biocompatible, and easily accessible, it can be used as a substitute for semisynthetic and synthetic superdisintegrants that are frequently found in stores (Setia *et al*., 2010)

Future prospects, challenges and marketing status

Fast dissolve product drug delivery has shown tremendous growth, with sales projected to have reached $1.4 billion in 2005 from 2001 sales of roughly $850 million (IMS Data). It appears possible that this technology can be modified to create a mucoadhesive system with a sustained release. It is anticipated that many medications requiring the prolonged release of bioactive material will benefit from this method. As a result, the lyophilized wafer

matrices created in this work are very useful for the quick delivery of medications when administered orally (Liew *et al*., 2012).

Over $15 billion worth of products of this kind are sold globally. Over 40% of medications sold worldwide today use rapid dissolve technology. The industry estimates that 88% of patients prefer taking pharmaceuticals that are combined in a fast-dissolving dose form because 40% of them have trouble swallowing regular pills, which is driving the growth (Rathborne*et al*., 2006).

Table 2: Previously formulated some antiemetic drug wafers

Name of drug	Excipients used	Method of preparation	Reference
1)Domperidone	Oxalic acid, malonic acid, succinic acid, fumaric acid, adipic acid, citric acid, 4-hydroxybenzoic acid, 2,4-dihydroxybenzoic acid, and pyrazine-2-carboxylic acid	Solution crystallization methods	(Rout *et al*., 2023)
2) Meclizine hydrochloride	Xanthan gum, Gelatin Gum acacia, Pullulan Methyl Paraben, Aspartame, Citric acid	Solvent casting method	(Kelodiya*et al*.,2021)
3) Ondansetron	Pectin, hydroxypropyl methylcellulose, sodium hyaluronate, sodium carboxymethylcellulose, chitosan or gelatin	Solvent casting method	(Giordani*et al*2020)
4)Domperidone	Sodium starch glycolate ,Corn starch, Sodium CMC, Crosspovidone , Mg stereate, Mannitol , Polyvinyl alcohol, Glycerin, DMSO	Direct compression method, Solvent casting method	(Khan, 2015)
5) Cinnarazine and Domperidone	Microcrystalline Cellulose pH102, Pearlitol200SD, CrospovidoneXL, Aerosil 200, Aspartame and Sodium StearylFumarate	Direct compression method	(Tambawala*et al.*, 2015)
6)Promethazine hydrochloride	Gelatin, Xanthan gum and Methyl cellulose	Co-evaporation method	(Ganguly*et al*., 2014)
7) Meclizine hydrochloride	Sodium starch glycolate Croscarmelose sodium Crospovidone Camphor Microcrystalline cellulose Aspartame Magnesium stearate	Sublimation method	(Vemula, Vangal, 2014)

CONCLUSION:

In response to the growing demand for more appealing dosage forms, wafers, an orodispersible film, have established themselves in the market. Wafers are intended to complement oral quick-dissolving films because of their superior bioavailability and absorption. Its taste and compatibility make it a favorite among people of all ages, but notably with kids and the elderly. The availability of modern technologies combined with well-built market acceptance means that medicated wafers, a novel drug delivery system with better patient compliance and potential to improve biopharmaceuticals properties, efficacy, and safety when compared to conventional dosage forms, are promising. Oral wafers can replace over-the-counter

drugs, both generic and name brand, from the market because they are less expensive and more consumer-friendly.

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