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Review Article

# Role of Polyherbal Formulations in Enhancing Skin and Hair Health: A Review of Chewable Tablet Dosage Forms

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## Abstract

Polyherbal chewable tablet of Phyllanthus emblica, Actinidia chinensis, Citrus × sinensis were developed with the aim to safe, effective, convenient dosage form for treat deficiency of vitamin C and give the healthy skin and hair. All around the world, polyherbal concoctions have been used. Another name for it is herb-herb combination or polyherbal treatment. A list of commercial and non-commercial polyherbal compositions from all over the world that dissolve rapidly without the need for water is compiled in this study. An important part of India's officially recognized healthcare system consists of herbal drugs. Due to the formulation's popularity and usage, other methods for making vitamin C tablets have been set suggested. It's had many natural properties like natural vitamin C, natural biotin which very helpful to treat hair falls, skin pigmentation, and provides healthy skin and hair. It have also many other properties like anti-ulcer, anticoagulant, immunity booster, boost collagen, etc. These poly-herbal compositions usually include a variety of medicinal plants, each selected for its own therapeutic qualities.

**Keywords:** Convenient; Concoctions; Compositions; Polyherbal

## Introduction

Chewable polyherbal tablets contain a variety of oral doses of herbal extracts. To release and absorb the active elements in the herbs, these tablets are meant to be chewed before ingesting. Polyherbal chewable pills provide the benefit of combining the medicinal qualities of combining many herbs into one dose form. When many herbs are taken together, the pills may work in concert. possibly enhancing therapeutic outcomes in comparison to using certain herbs alone. Children, adults, and elderly patients who are unable or hesitant to take whole pills due to their size or swallowing difficulties should all be able to easily and safely receive chewable tablets. The chewable tablet is advised to dissolve more gradually in the oral cavity whether or not chewing is taking place. They have a smooth, level surface and a moderate flavour that isn't harsh or awful. There are no flavourings or sweeteners in these chewable tablets. Choosing the right excipients is essential to the creation of a good formulation. Chewable tablet bite into the buccal cavity before swallowing because they are big and difficult to swallow. Numerous plants or botanical chemicals are combined in polyherbal preparations, which have a long history and are often utilized in conventional medical procedures worldwide. These formulations have been used for decades, if not millennia, across a wide range of nations and civilizations, including Ayurveda, Traditional Chinese Medicine (TCM), Unani, and Native American medicine. Because it is believed that mixing many herbs may have synergistic therapeutic effects and boost overall efficacy, polyherbal formulations are employed. Chewable tablets' increased absorption properties result in their increased bioavailability. When a tablet breaks apart or is bitten in the mouth, smaller molecules are created, such as an enhanced surface area of the drug molecules entering the gastrointestinal system. This benefit sets chewable tablets apart from regular capsules or strong (swallowing) tablets, which are consumed mostly after dissolving and breaking down. Medications that are pleasant and easily broken down are known as chewable tablet. Polyherbal formulations may be a safer alternative to single-drug formulations. By combining several herbs, it is occasionally possible to lower the individual doses of each plant, reducing the risk of adverse effects caused by using a single herb in excess. Since the other herbs in the formulation may mitigate the adverse effects of a particular herb, using a variety of herbs might help offset the risk of

toxicity. Although polyherbal formulations have many cultural and therapeutic uses, it is important to keep in mind that careful scientific research and clinical studies are necessary to evaluate their safety and effectiveness. our chewable tablet is mainly for healthy skin and hair by the help of enrich vitamin c constituent in the tablet. In chewable tablet our main ingredients are kiwi, orange, and amla, they all are having their own pharmacological properties but the common properties are they all have enrich vitamin C which help to promotes hair growth, reduce hair fall, improving skin texture, tone, repairing skin damage and also boost the collagen.

## Background

In the current era the chewable tablet is globally use, also have its various beneficial properties as compare than normal tablet, Since the beginning of human history, polyherbal concoctions have been utilized. Ayurveda is an ancient Indian medical practice that uses polyherbal formulations, as described in texts that date back thousands of years, including the Charaka Samhita and the Sushruta Samhita.. In a similar vein, TCM employs a number of polyherbal formulas; which is over two thousand years old, has famous examples. in the past era the chewable tablet is not much popular compare than the present era but the active ingredients are used in the formulation of our polyherbal chewable tablet are used in the ancient time and also mentioned in the ayurveda and other ancient book, the ingredients are kiwi, orange and amla all have the beneficial properties to promote healthy skin and hair, all have its own beneficial properties to treat varieties of skin as well as hair problems. In ancient time all ingredients are popularly used to treat varieties of problem in skin as hair.

## Formulation and manufacturing

Several herbs are blended to produce polyherbal chewable tablet, which have an integrative effect and enhance therapeutic benefits. The formulation and manufacturing of polyherbal chewable tablets include a number of considerations.

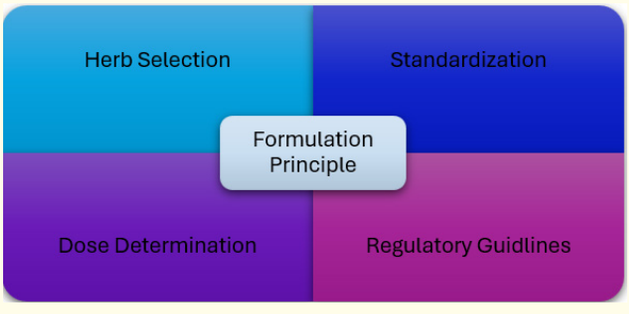


**Figure 1**

## Herb selection

The selection of herbs is determined by their versatility and special therapeutic properties. Herbs with complementary qualities are utilized to create a synergistic effect.

## Standardization

In order to maintain consistency from batch to batch, active ingredients or marker compounds are identified and quantified.

## Dose determination

Certain plants are dosed according to their safety profiles and therapeutic qualities. Finding the optimal balance between safety and efficacy is the aim.

## Regulatory guidelines

Legal requirements for labelling, the highest allowed concentrations, and the use of herbs should all be followed in the formulation.

## Manufacturing methods

### Drying and powdering

After extraction, the plant extracts are dried to remove excess moisture. After that, the dried herbal extracts are ground into a powder. The powders' particle sizes must be constant for the final product to be homogeneous.

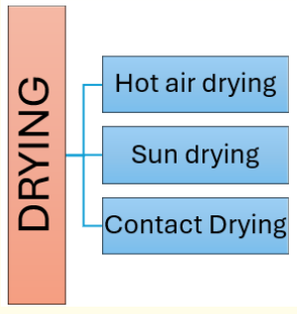


**Figure 2**

### Hot air drying

Nowadays, hot air drying is the most often used drying method. It provides a simple, affordable solution for long-lasting industrial and culinary goods. This process might, however, completely dry the product's surface, which could lead to cracks or an uneven finish. It could also take a long time, depending on the product and the allowed drying temperature.

### Sun drying

Using the sun to dry fabrics is the most traditional and economical drying technique. Even though it loses some of the product's qualities and vitamins, it works best for traditional fruits and vegetables that dry in remote areas, including herbs. Nevertheless, this method requires a lot of time and space and provides minimal process control.

### Contact drying

In order to dry a product, this drying method exposes it to heated walls. Rotating drums are frequently used for drying in order to increase uniformity. The primary uses of this technology are in heavy industry drying processes. However, there is no guarantee of process homogeneity, and direct contact with hot walls may denaturize the dried product.

### Blending

The powdered plant extracts are mixed with excipients to provide an equal dispersion of the active components. This stage may also involve adding sweets and flavorings to improve palatability.

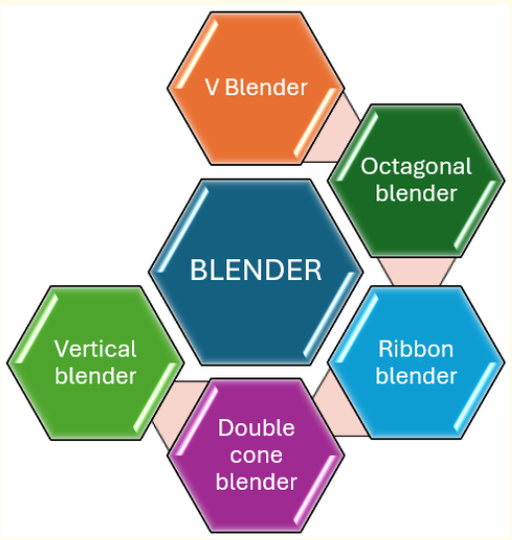


**Figure 3**

### V blender

The fundamental principle of a V blender machine is that its cylinders form a "V" with a degree symmetry angle. Additionally, an apex port with a discharge valve is included. Nearly all of the output from the V-form blender is filled. Cleaning is simple because the shaft protrusion is absent. On the other hand, a V blender needs a lot of headroom to be installed. It is not compatible with a variety of densities or sizes.

### Octagonal blender

An octagonal blender is designed with an octagonal mixing container and integrated baffles for finely blending dry grains and powders. This blender is a fantastic option for use in offices and labs because of its dust-free charging method and robust rectangular base. This is the perfect blender whether you're searching for one for your house or place of business.

### Ribbon blender

The components of a ribbon blender are an outer and inner helical ribbon with a horizontal U-shaped trough. Because the ribbons are angled, they can move in very different directions from one another. 300 feet per minute is the usual speed of the agitator tip range. The bulk density of the product and the batch amount will dictate whether a conventional or heavy-duty ribbon blender is needed. Ribbon blenders typically have a bulk density limitation of 35 pounds per cubic foot.

### Double cone blender

In many different industries, such as the fertilizer, food, detergent, chemical, and cosmetic sectors, mixing is one of the most often employed processes. Considering that each unit has the same amount of each ingredient, this is being done to produce a constant bulk combination. Dry powder and granules are thoroughly blended using a double cone blender. Double cone blenders and cone blenders for dry powder mixing are two different types of equipment used in a variety of sectors.

### Vertical blender

This is much better than horizontal blender. It can be transported to a location where bags are filled. Additionally, they use 50% less electricity and floor space per combined unit of material. This makes them perfect for buildings with several stories.

### Granulation

The tablet's compressibility and flowability can be improved by granulation. In order to produce granules of the right size, the powdered mixture is wetted with a binder solution prior to granulation.

### Dry granulation

When working with wet or heat-sensitive ingredients in tablet production, dry granulation is used. Instead of using lubricants, the mixture is densified by force as it passes through roller compactors. Following a gentle splitting of the completed sheet into flakes, Because of its simple equipment, minimal floor area requirements,

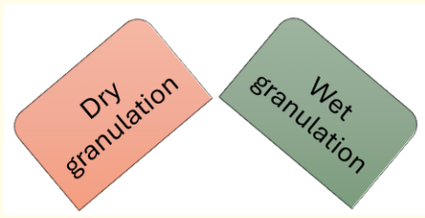


**Figure 4**

and required procedures, dry granulation is an efficient and affordable production technique. Nonetheless, there are a number of challenges that must be overcome, such as preserving a consistent distribution of particle sizes and flowability, avoiding cross-contamination with dust particles produced during the procedure, and more.

### Wet granulation

Wet granulation is a popular technique in the pharmaceutical industry for making tablets. Water or an organic solvent is sprayed or poured into a blend to cause its small particles to aggregate into granules of the appropriate size with the required flow properties. Sometimes challenging, wet granulation calls for a number of tools and processes, such as sizing, drying.

To create any mix of medical ingredients. Wet granulation is basically the preferred technique for Tadikonda Rama Rao, Aditya Anand, and/or excipients for compression, encapsulation, or filling processes, such as into sachets. The two fundamental stages of wet granulation are the moistening and drying phases. Both procedures can be completed at the same time.

### Coating

Improve the tablets' stability, flavour, and appearance, coating may be applied. Depending on the particular requirements of the formulation, enteric coatings, sugar, or film-forming polymers to can all be used as coating components.

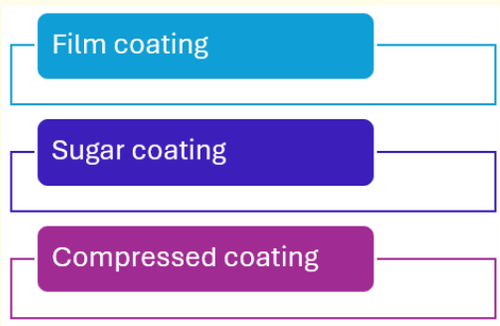


**Figure 5**

### Film coating

A very popular approach because there are so many covered products available. Applying a thin polymer layer on a tablet, capsule, or multiarticulate core—typically by spraying—is known as film coating.

### Sugar coating

The pharmaceutical industry has been using this ancient technique, which is comparable to coating candies, since the late 1800s. In this unit activity, a coating based on sucrose is continually applied to tablet cores using coating technology. Each tablet is encased in a thick layer of sugar when the syrup's water evaporates during this procedure. Sugar coats frequently have a lot of colour and sparkle.

### Compression coating

The application and acceptability of this technique in the production of modified release commodities has increased dramatically. Using tableting machinery specifically designed to crush granules around a prefabricated tablet core, it is mostly a dry process.

### Excipient and their role

### Sweeteners

The flavour of polyherbal chewable tablets can be enhanced by adding artificial sweeteners like aspartame and saccharin or natural sweeteners like fructose and sucrose. They improve the tablets' palatability by masking the bitter or unpleasant flavour of certain of the botanical ingredients.

### Flavouring agent

Natural or artificial flavourings are added to the chewable tablet to improve its overall flavour and aroma. They can mask any unpleasant aftertastes and provide a flavour that patients would like.

### Binders

The tablet's binders provide cohesion and hold its constituent parts together. It ensures that the tablets maintain their shape, hardness, and texture. Microcrystalline cellulose and hydroxypropyl cellulose are examples of cellulose derivatives and polyvinylpyrrolidone (PVP), two typical binders.

### Disintegrants

Disintegrants facilitate the drug's release in the gastrointestinal system and hasten the tablet's rapid disintegration during chewing. In order for the herbal ingredients to be released and effectively absorbed, they ensure that the pills disintegrate quickly. Common disintegrants include crospovidone, sodium starch glycolate, and croscarmellose sodium.

### Lubricants

To reduce friction during manufacturing, lubricants are added to the tablet formulation and the compression equipment. Additionally, they help ensure that tablets are ejected from the compression machine smoothly and without sticking. Common lubricants include magnesium stearate, talc, and stearic acid.

### Diluent and fillers

Tablet compression is made possible by the use of diluents or fillers to increase the bulk content of the tablets, which produces a constant tablet weight. For instance, common diluents include lactose, mannitol, sorbitol, and microcrystalline cellulose.

### Evaluation of tablet

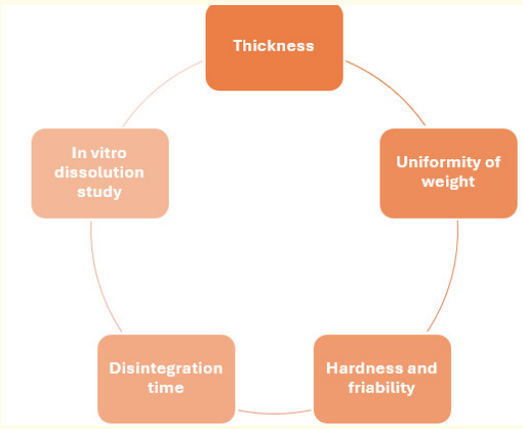


**Figure 6**

### Thickness

The tablet's thickness was measured with a Vernier calliper, at least 15 tablets from each batch were gathered and sampled, and the average thickness of all the tablets was calculated.

### Uniformity of weight

A batch of tablets should all weigh the same, and any variation from that weight should be within a reasonable range. Measurements were made using a computerized balance, and the results were accurate to within 1 mg. Typically, twenty pills are sampled in order to assess weight management.

### Hardness and friability

The 15 tablets in each formulation are tested using the Pfizer hardness tester and the Electro lab friabilator test instrument to determine the tablets' relative levels of hardness and friability.

### Disintegration time

Following the insertion of each of the six pills, the tubes were sealed and a plastic disk was put on top of the tablets. Consequently, the disk exerts pressure on the tablets. The test tubes were allowed to rise and fall inside a water medium maintained at 37 degrees Celsius at a rate of 30–35 cycles per minute.

### *In vitro* dissolution study

A polyherbal tablet's dissolving profile is typically assessed using the USP dissolution apparatus II, 900 millilitres of the necessary buffer solution, 37±0.5 degrees Celsius, and a stirring rate of 100 revolutions per minute. Typically, a UV spectrophotometer is used to test the samples' absorbance after they have been collected at various intervals. The same quantity of buffer sample is introduced to the basket at the same time in order to keep the buffer solution balanced when the sample is collected. Whatman filter paper is used to filter the collected samples prior to measuring the absorbance.

### Herbal ingredient and their therapeutic uses

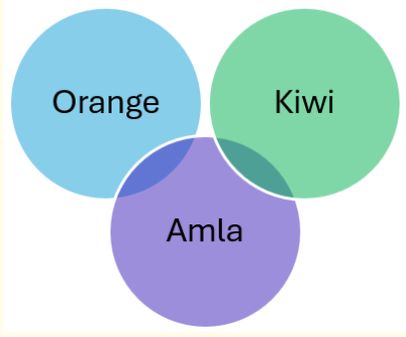


**Figure 7**

### Orange (Citrus × sinensis)

The substances found in the peel of sweet orange fruits, including terpenoids, flavonoids, steroids, and essential oil, have shown promising pharmacological properties as antimicrobials, anticancer, antioxidants, and anti-inflammatory and anti-osteoporosis agents.

**Figure 8**

### Amla (*Phyllanthus emblica*)

Fruits from the Amla plant (*Emblica officinalis*) have been used for centuries to treat illnesses. Among its many components are tannins, alkaloids, gallic acid, fibre, carbohydrates, and vitamin C. Its ability to alter the activity of many genes has demonstrated its involvement in preventing cancer.

**Figure 9**

### Kiwi (*Actinidia deliciosa)*

Actinidin, a cysteine protease with hydrolytic capabilities for proteins, is found in kiwifruit. Actinidin, which makes about 40% of the soluble protein in green kiwifruit, is the main soluble protein. Kiwellin and a protein that resembles thaumatin are among the other proteins found.

**Figure 10**

## Clinical applications and future perspectives

### Vitamin C and mineral supplement

Vitamins and minerals are often administered as chewable tablets to children who may have difficulty swallowing medications.

### Anti-Ulcer

Heartburn, stomach ulcers, and reflux illness are among the ailments that can be treated using chewable tablet that contain excess stomach acid.

### Gastroprotective activity

It aids in reducing stomach irritation and indigestion symptoms. The inability to properly digest food, known as indigestion, is linked to stomach pain and discomfort.

### Enzymatic activity

It contains actinidin which is a proteolytic enzyme which can breakdown the protein.

### Immunity booster

It acts like as immunomodulator, it has the chemical constituent which have potency to boost the immunity.

### Boost collagen

it boosts the collagen to help the tightening the skin and provide the wrinkle free skin.

### Hair growth

It has natural biotin to help the reducing the hair fall and promoting the haor growth.

### Brighter skin

It helps to reduce skin pigmentation and inhibit the melanin production; it also has enriched vitamin C to helping the glowing skin.

## Ideal characteristics of chewable tablets

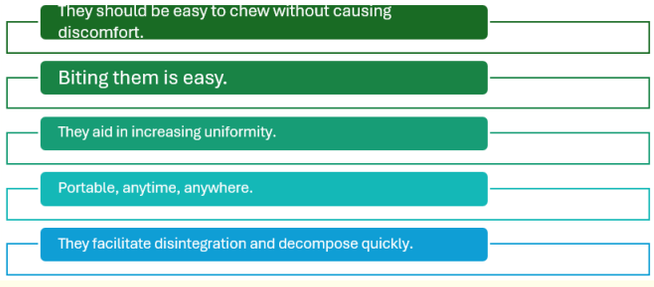


**Figure 11**

## Advantages of chewable tablets

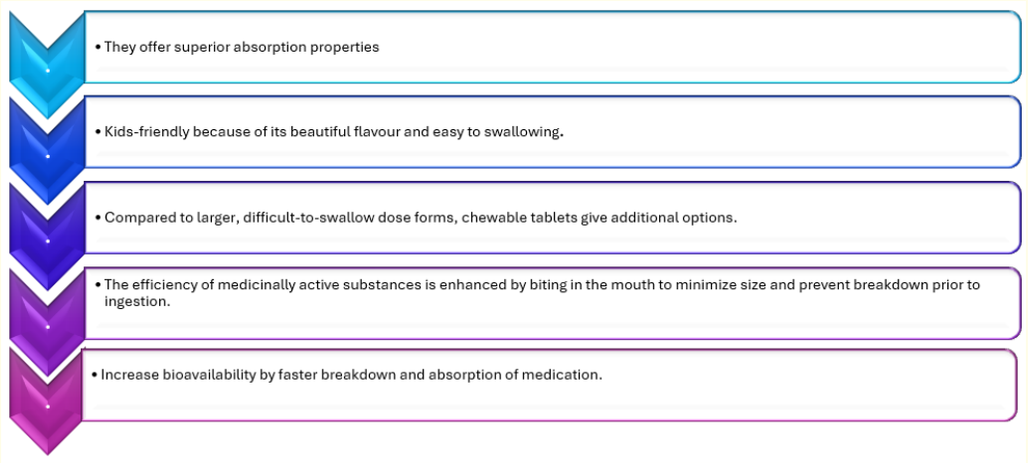


**Figure 12**

## Disadvantages of chewable tablets

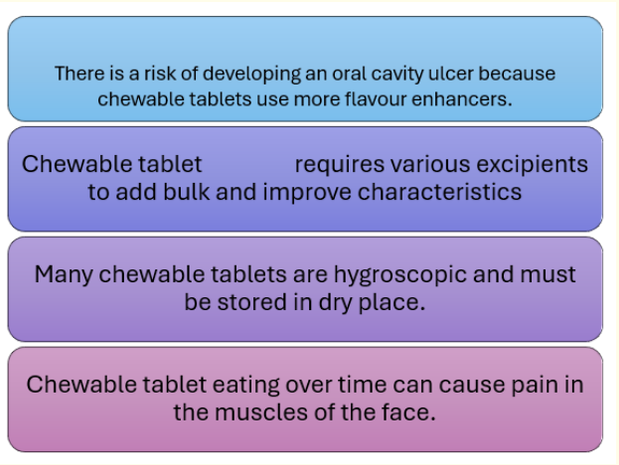


**Figure 13**

## List of some marketed chewable tablet

| S. No. | Marketed Product | Manufacturing Company | Therapeutic Uses |
|---|---|---|---|
| 1 | Vitamin c and zinc chewable tablets | Root cure organics | To treat hair problem. |
| 2 | Wellchew herbal chewable tablets | One wellness international Pvt. Ltd. | To maintain healthy bones and teeth |
| 3 | Smokill | Novel nutrients | To mask the unpleasant taste |
| 4 | Orosoft chewable tablets | Innovative pharmaceuticals | To treat mouth ulcers |
| 5 | Organic ginger tablet | HCR ayurveda | Throat infections |
| 6 | In fresh bad breath | Infresh products | To treat bad breath |
| 7 | Colfrin – H | Cooper pharma limited | Cold and Flu control |
| 8 | Khuli saans | Psychocare Health Private Limited | Dry cough and cold |
| 9 | Orobest | Ikon remedies Pvt. Ltd | To treat mouth ulcers |

**Table 1**

## Conclusion

From local and systemic therapies to specialty treatments, chewable tablets are a flexible and efficient dose form that meets a variety of therapeutic demands. With a number of advantages that make them helpful in healthcare, chewable tablets are essential in the pharmaceutical industry. Their chewable form increases patient compliance, especially for elders, children, and patients with certain medical conditions who have difficulty swallowing traditional tablets. The ingredients are used in the formulations are amla, kiwi, orange which have their own pharmacological action. All ingredients have enriched vitamin c level in the composition and also have natural biotin which helping to promotes hair growth, reduce hair fall, improve skin tone, and show the glowing skin. It has many other properties like anti-ulcer, anti-coagulant, immunity booster, boost collagen etc. In order to appeal to children and reduce their resistance to taking medication, chewable pills are occasionally flavored with delicious flavors [1-20].

## Bibliography

1. Abubakar AR and Haque M. "Preparation of Medicinal Plants: Basic Extraction and Fractionation Procedures for Experimental Purposes". *Journal of Pharmacy and Bioallied Sciences* 12.1 (2020): 1-10.

2. Agarwal M and Kamal R. "Studies on flavonoids production using in vitro cultures of Momordica charanctia L". *Indian Journal of Biotechnology* 6 (2007): 277-279.

3. Khokra SL., *et al*. "Formulation Development and Evaluation of Chewable Tablet of Albendazole by different Techniques". *International Journal of Pharmacy and Pharmaceutical Sciences* 4.1 (2012): 461-464.

4. V Kumaran., *et al*. "Formulation development of acetaminophen tablets by direct compression and its pharmacoeconomics". *Indian Drugs* 41.8 (2004): 473-477.

5. ellwig E and Lussi A. "Oral hygiene products and acidic medicines". *Monography Oral Science* 20 (2006): 112-118.

6. Palla AH., *et al*. "Systematic review of polyherbal combinations used in metabolic syndrome". *Frontiers in Pharmacology* 12 (2021): 752926.

7. Patil J., *et al*. "Formulation development and evaluation of chewable tablets containing non-sedating antihistamine". *Journal of Pharmaceutical and Scientific Innovation* 3 (2012): 112-17.

8. Salawi A. "Pharmaceutical coating and its different approaches, a review". *Polymers (Basel)* 14.16 (2022): 3318.

9. Singh N., *et al*. "An overview on ashwagandha: a Rasayana (rejuvenator) of Ayurveda". *African Journal of Traditional, Complementary and Alternative Medicines* 8 (2011): 208-213.

10. Vyas A., *et al*. "TLC Densitometric method for the estimation of Piperine in Ayurvedic Formulation Trikatu Churna". *Oriental Journal of Chemistry* 27.1 (2001): 301-309.

11. Zarvandi M., *et al*. "Safety and efficacy of a polyherbal formulation for the management of dyslipidemia and hyperglycemia in patients with advanced-stage of type-2 diabetes". *Biomed Pharmacotherapy* 89 (2017): 69-75.

12. Tripathi S., *et al*. "Development of chewable tablet of Trikatu churna and standardization by densitometry". *Semantic Scholar* 16 (2017): 256-262.

13. Monica Damle. "Glycyrrhiza Glabra (Liquorice) - A Potent Medicinal Herb". HM 2.2 (2014): 132-136; SVKM's Dr. Bhanuben Nanavati College of Pharmacy, Vile Parle (West), Mumbai 400 056, India.

14. Mahewash Sana Asadulla Pathan. "Formulation And Evaluation Of Chewable Tablets Containing Aqueous Extract Of Zingiber Officinale". *World Journal of Pharmacy and Pharmaceutical Sciences* 8.3 (2019).

15. Bhavamishra. Haritakyadivarga Dr. K.C. Chunekar, Translator. Bhavaprakasha Nighantu, Reprint. 2004 Varanasi Chaukhambhabharati academy (2004): 10-12.

16. Biswas NR., *et al*. "Evaluation of Ophthacare eye drops: A herbal formulation in the management of various ophthalmic disorders". *Phytotherapy Research* 15 (2001): 618-620.

17. Kim HJ., *et al*. "Influence of amla (*EmblicaofficinalisGaertn*.) on hypercholesterolemia and lipid peroxidation in cholesterol-fed rats". *Journal of Nutritional Science and Vitaminology (Tokyo)* 51 (2005): 413-418.

18. Saravanan S., *et al*. "Hypolipidemic effect of triphala in experimentally induced hypercholesteremic rats". *Yakugaku Zasshi* 127 (2007): 385-388.

19. Mehta RM. "Processing of tablets Pharmaceutics-I". 20105th ed Delhi Vallabha Prakashana: 248.

20. Al-Rehaily AJ., *et al*. "Gastroprotective effects of 'Amla' *Emblicaofficinalis* on *in vivo* test models in rats". *Phytomedicine* 9 (2002): 515-522.