

A Review Artical on Various Types of Herbal Drug Formulation

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ABSTRACT:-

Herbal drug formulations have become a vital part of modern pharmaceutical research, as they combine traditional plant-based remedies with advanced delivery techniques. Over the years, several types of herbal formulations have been developed, ranging from conventional forms such as powders, tablets, capsules, syrups and ointments to novel systems including gels, emulsions, liposomes, nanoparticles, and transdermal patches. Each formulation type is designed to improve the stability, bioavailability, and therapeutic potential of herbal constituents while ensuring better patient compliance.

This review article provides a comprehensive overview of the different types of herbal drug formulations, discussing their preparation methods, advantages, limitations, and clinical significance. Special attention is given to recent advancements in novel delivery systems that address common challenges such as poor solubility, degradation and inconsistent absorption of herbal actives. Despite significant progress, issues related to standardization, quality assurance, and large-scale production remain barriers to wider acceptance. Continued innovation and regulatory support are essential for establishing herbal formulations as safe, effective, and reliable options in healthcare.

Keywords:- herbal raw material, herbal extracts, Herbs Formulation, Tablet, Syrup.

I. INTRODUCTION:-

Over the last few decades, the use of herbal products has grown remarkably all over the world. Today, nearly 80% of people globally—especially in developing countries—depend on herbal medicines for their everyday health needs. In Ghana, for instance, around 70% of the population uses herbal remedies, either by themselves or together with modern medicines

In simple terms, herbal products are made from whole plants, specific plant parts, or extracts, and are used to help prevent or treat illnesses. To

avoid mixing them up with herbs used just for cooking, these are called ‘herbal medicinal products’ (HMPs) when they’re meant for healthcare [4]. Many of these plants have been used for centuries in certain parts of the world, but thanks to easier travel and better communication, they are now popular in many countries

Herbs can be turned into different forms to suit various needs. People use them as raw or ground herbs, teas, syrups, essential oils, ointments, liniments, capsules, or tablets. Common herbal products include decoctions (boiled extracts), herbal teas, tinctures, glycerites, oxymels, soaps, tablets, capsules, creams, and ointments. How they’re prepared depends on factors like the type of solvent, temperature, and how long they’re extracted. This could mean using alcohol, vinegar, hot water, or even cold infusions

Because more people are buying herbal medicines, companies now make them on a large scale. But mass production means they’re stored for longer periods, which can affect their quality. That’s why stability testing is so important—it helps make sure these products stay safe and effective until their expiry date. Such tests usually check physical features, microbial safety, and chemical consistency using various scientific methods. Testing chemical stability can be tricky since plant extracts contain so many different compounds. Plus, natural plant enzymes—like esterases, glycosidases, and oxidases—can break down these compounds over time

This paper aims to give an overview of the different forms in which herbal medicines are available today.

Herbal medicine is becoming more popular as people look for safer, more natural ways to care for their health in today’s world. Many see it as a promising approach for the future because of its proven health benefits. Around the world, there’s a growing interest in going back to nature and using plant-based remedies. After all, people

have turned to medicinal plants for healing since ancient times.

For centuries, people have used medicinal plants to treat all kinds of health problems — and even today, they remain an important source of healing. In recent years, herbal medicines have become even more popular, especially in developed countries. More and more people now turn to herbs to help with issues like trouble sleeping, anxiety, weight problems, asthma, congestion, gum disease, eczema, varicose veins, and weak immunity.

There are many reasons why this trend is growing. Many people believe herbal remedies are safer than modern synthetic drugs and trust that nature provides safe options. There's also a stronger push these days to choose natural products that are better for the environment. In Western countries, this “back to nature” movement has boosted interest in herbal products even more. Advances in how these products are made and stored have helped too. These days, it's even possible to grow specially cultivated plants that produce higher amounts of useful compounds.

Although people use tens of thousands of plant species in traditional medicine — between 25,000 and 75,000 by some estimates — only about one percent of these have been officially studied and approved for commercial use. In many parts of the world, especially in developing countries, traditional medicine is still the main option for healthcare because it's affordable and widely trusted.

Plants and their extracts have always been used to help prevent and treat many illnesses. Even now, around 121 plant-based compounds are used in modern prescription drugs — that's about a quarter of all medicines doctors prescribe today.

But keeping herbal medicines safe is not always simple. The current system for monitoring drug safety — called pharmacovigilance — was mainly designed for synthetic drugs, not plant-based ones. Herbal products have unique qualities, and the way they're regulated and used can vary widely from place to place, which makes safety monitoring more complicated. More experts now agree that we need better ways to track the safety of herbal medicines, because the tools we use for regular drugs don't always work well for natural remedies.

A recent example of the importance of traditional medicine is the COVID-19 pandemic. In China, Traditional Chinese Medicine (TCM) was used in over 90% of COVID-19 cases. It helped manage symptoms and lower the risk of severe

illness, death, and relapse. In total, 166 herbal formulas using 179 different medicinal plants were used to help treat patients.

Some well-known modern drugs, like atropine, colchicine, digoxin, taxol, and vincristine, all come from plants too. This shows just how important plant-based medicines — or phytomedicines — still are today. Pharmacy students used to study plants in depth through pharmacognosy, but knowing plant chemistry alone isn't enough to handle all the challenges of modern drug development and safety.

A good understanding of how medicines work in the body is important, and these days more clinical courses and training programs are starting to include herbal medicine in what they teach. Pharmacists now also have more reliable information about herbs through new publications and research.

In many developing countries, traditional medicine is often the main — and sometimes the only — type of healthcare that most people can afford. For millions, it's their first and most trusted option when they need help for common health problems. In wealthier countries, modern medical services are usually easy to access, but even there, more people have started turning to traditional remedies again. Many patients today want gentler, more natural treatments when possible. This renewed interest comes partly because traditional systems have shown potential in treating diseases like malaria and chronic skin conditions such as eczema.

When COVID-19 spread worldwide, many people went back to old herbal practices to help support their health. This situation reminded people about trusted systems like Ayurveda, Unani, and Traditional Chinese Medicine, and brought herbs and natural treatments back into everyday conversation.

This book chapter looks at how herbs, herbal medicines, and herbal preparations can keep developing in a safe and effective way. It also explores how herbal products are regulated in developing countries, how they are used, and how they can be properly tested, marketed, and made available to more people.

Herbal drugs:-

Herbal drugs are made from plants or parts of plants that have been collected, dried, and stored so they can be used as medicine. These plant-based products contain active ingredients that come from different parts of the plant, like the

leaves, roots, stems, flowers, or seeds. They can be used in their natural form or turned into extracts and other preparations.

Herbal medicines come in many forms — they can be simple raw herbs, specially prepared materials, or fully finished products ready for use. In some traditional practices, they may also include natural ingredients from animals or minerals, along with plants.

Herbs are usually whole or ground-up parts of plants, such as leaves, flowers, or roots. Herbal materials go a step further and can include fresh plant juices, gums, resins, essential oils, or dried herbal powders. In some cultures, people treat these materials in special ways, like steaming them, roasting them with honey, or soaking them in alcohol to bring out their healing properties.

Herbal preparations are the main ingredient in finished herbal products. These preparations are made by processes like extraction, purification, and concentration. They can be in the form of crushed herbs, powders, tinctures, or oils, and are often made by soaking or gently heating the herbs with honey, alcohol, or other liquids.

Finished herbal products are ready-made remedies that contain one or more of these preparations. When different herbs are blended

together, the result is called a mixture herbal product. These products may also have other harmless ingredients that help deliver the herbal benefits more effectively.

However, if a finished product or herbal blend contains added chemical ingredients — like synthetic compounds or isolated plant chemicals — it's not considered a genuine herbal medicine. True herbal remedies are still widely used in many healthcare traditions around the world. Systems like Chinese medicine, Ayurveda, Unani, naturopathy, osteopathy, and homeopathy often use herbs as an important part of their treatments.

Advantages of herbal drugs:-

1. Low cost of production.
2. They may have fewer side effects.
3. Effective with chronic condition.
4. Wide spread availability.

Disadvantages of herbal drugs:-

1. Lack of dosage instruction.
2. Poison risk associated with wild herbs.
3. Can interact with other drugs.
4. Inappropriate for many condition.
5. Some are not safe to use.

Types of Herbal drug Formulation:-

Sr. No	Liquid form	Solid form	Other
1	Decoction	Tablet	Ointment/cream
2	Tincture	Capsule	Inhalation
3	Herbal syrup	Granules	Patches
4	Herbal emulsion	—	—

Liquid form:-

1.Decoctions :-

Decoctions are one of the oldest and most common ways to prepare herbal medicine. They're made by boiling herbs in water to draw out their healing compounds, especially from tougher plant parts like roots, bark, or woody stems. This method is often used when herbs don't dissolve easily in water.

Usually, a decoction contains a mix of 2 to 12 different herbs, and it's best when freshly made. It should ideally be used within 24 hours, though it can last up to 3 days if kept in a very cool place. If someone wants to store it for longer, natural preservatives can be added—but it's important to

test how long the decoction stays safe and effective.

To improve the taste, people often sweeten decoctions with honey or syrup. A well-known example is the Chinese Sijunzi decoction, which blends herbs like Panax ginseng, Poria cocos, Atractylodes macrocephala, and Glycyrrhiza uralensis to support overall health and wellness.

Researchers used liquid chromatography tandem mass spectrometry (LC/MSⁿ) to analyze three important active compounds: ginsenoside from Panax ginseng, and flavonoids and triterpenoids from Glycyrrhiza uralensis. These compounds were studied both in the traditional Sijunzi decoction and in extracts from the

individual herbs. The results showed that the concentration of these active ingredients in the decoction was different from that in the single herb extracts. This suggests that the decoction process itself alters the final composition of active compounds.

In a separate study, the decoction made from *Cassia fistula* pod pulp remained chemically stable, particularly in terms of its rhein content, even after being stored for six months under both accelerated ($40 \pm 2^\circ\text{C}$ / $75 \pm 5\%$ relative humidity) and regular ($30 \pm 2^\circ\text{C}$ / $75 \pm 5\%$ RH) conditions. However, despite its stability, the decoction had very little antifungal effect against dermatophytes when compared to its hydrolyzed version.

2. Tinctures :-

Tinctures are liquid extracts made from herbs, typically using a mix of alcohol and water. This combination is better at drawing out a wide variety of plant compounds than water alone. The process is simple—herbal parts are soaked (or "macerated") in this solution, allowing the active ingredients to infuse into the liquid.

Because tinctures contain such a diverse range of compounds, checking their quality isn't always straightforward. That's why advanced tools like Nuclear Magnetic Resonance (NMR) and Mass Spectrometry (MS) are used. These help create a chemical "fingerprint" of the tincture, making it easier to tell one product from another, ensure consistency across batches, and monitor how long they remain effective.

One major benefit of using alcohol in tinctures is that it acts as a natural preservative, helping the product last for several years. To keep a tincture stable and safe over time, it generally needs at least 20% alcohol by volume, though most commercially sold tinctures contain 25% or more.

The exact alcohol strength matters because different compounds dissolve best at different levels. For example:

25% alcohol works well for water-soluble compounds like tannins, mucilage, some flavonoids, and certain saponins.

45–60% alcohol is ideal for extracting alkaloids, essential oils, some glycosides, and most saponins.

90% alcohol is needed for tougher, resinous materials like resins and oleoresins.

Choosing the right alcohol concentration is key to getting the best quality tincture.

With proper storage, most tinctures can last around five years. However, some don't hold

up as well. For example, tinctures made from Passionflower and Milk Thistle (both using 60% alcohol) were found to last only six months and three months, respectively, at room temperature due to their sensitivity to heat.

Poor storage can also lead to safety issues. For instance, old household tinctures of Strong Iodine were found to contain more iodine than allowed by official standards. Similarly, *Cannabis sativa* tinctures undergo chemical changes during storage—specifically, the compound THCA gradually converts to THC. This shift was observed after 15 months in a refrigerator and as quickly as 3 months on a shelf.

3. Herbal Syrup :-

Herbal syrup is a sweet, liquid remedy made by blending a strong herbal extract—called a decoction—with natural sweeteners like honey or sugar. Sometimes, a bit of alcohol is added too. These ingredients not only make the syrup taste better but also help preserve it and give it a thicker texture.

Herbal syrups have been part of traditional healing practices for centuries, especially when it comes to treating coughs, colds, and other common illnesses. Ingredients like *Pudina* (mint), *Tulsi* (holy basil), cinnamon, and honey are often used in these syrups. People have relied on these natural ingredients for generations because of their soothing and healing effects.

These kinds of herbal preparations are popular around the world, not just because they work, but also because they're affordable, easy to find, and generally safer for long-term use compared to synthetic drugs. They've become a go-to remedy, especially in homes and communities where natural healing is preferred.

Cough syrup is one of the most common forms of herbal syrup. It's taken by mouth and is especially helpful for people who have trouble swallowing pills. Syrups are usually made with purified water and sugar, giving them a thick and sweet consistency. Some syrups are just flavored liquids without any active medicine—these are called non-medicated syrups. They're often used to improve the taste of other medications, especially for children. When the syrup contains actual medicine, it's known as a medicated syrup.

Because syrups are high in sugar and water, they can attract bacteria if not preserved properly. That's why preservatives are often added—to keep them safe and effective for longer.

Overall, herbal syrups remain a trusted and soothing way to deliver plant-based care,

especially for coughs and other respiratory issues.

Table:-1 Formulation table in herbal syrup

Sr.no	Ingredient	Quantity	Activity
1	Pudina	In 16ml	Antiseptic
2	Tulsi	In 17ml	Antioxidant
3	Cinnamon	In 17ml	Anti microbial
4	Honey	In 50%	Viscosity modifier

Method of preparation of final herbal syrup:-

To make the final herbal syrup, 16 ml of Pudina (mint) decoction was mixed with either 17 ml of Tulsi (holy basil) or cinnamon decoction. While stirring the mixture gently, honey was slowly added until it made up about half of the total volume. The honey acts as a natural preservative.

After everything was well mixed, the syrup was ready for testing (see Fig. 6). To check how well everything had dissolved, the clarity of the syrup was observed by eye.

4.Herbal Emulsions :-

In the world of medicine, the term "emulsion" usually refers to liquid mixtures meant to be taken orally. When similar mixtures are created for use on the skin, they're usually given more familiar names like lotions or creams—names that better reflect how they're used (Christopher & Dawn, 2008).

So, what exactly is an emulsion?At its core, it's a mixture of two liquids that don't

naturally mix—like oil and water. One of these liquids is broken down into tiny droplets and spread throughout the other. The liquid forming the droplets is called the dispersed phase, while the liquid that surrounds those droplets is called the continuous phase.

Because these two types of liquids don't want to stay mixed, we add a helper: the emulsifier. This ingredient helps the emulsion stay stable by coating the droplets and preventing them from clumping together or separating (Agarwal & Rajesh, 2007; Javed et al., 2008).

Depending on what's in the mixture, the final emulsion can range in texture—from something light and runny like a lotion, to something thick and creamy like a moisturizing cream (Alfred, 2005). The size of the droplets also plays a role in how the product feels, and these typically range between 0.1 to 100 micrometers (Agarwal & Rajesh, 2007).

Table:- 2 Formulation table of herbal emulsion

Sr. No.	Ingredient	Quantity	Activity
1	Liquid paraffin	12.5	Anti diarrhoeal
2	Cetyl alcohol	10	Emollient
3	Tween 80*	0.64	surfactant
4	Span 80*	0.36	Reduce interfacial tension
5	Carbopol 974*	0.25	Suspending agent
6	HPMC	-	Texture modifier

7	Distilled water	15	Aqueous phase
8	Phenoxyethanol caprylyl glycol	0.25	Preservative
9	Hypericum perforatum L. extract	3.5	Anti depressant
10	Calendula officinalis L.extract	3.5	Anti inflammatory
11	Rosa damascena L. oil	1	Anti bacterial
12	Triticum vulgare L.oil	1.5	Moisturizer
13	Ascorbyl palmitate	1.5	Anti oxident
	Total Amount	50	

How the Formulations Were Prepared :-

To create the final herbal formulations, researchers first conducted pre-formulation studies to ensure all the herbal ingredients were compatible. These studies were based on earlier research and helped guide the formulation process. A hands-on, trial-and-error method was used to see how different factors—like the amount of surfactant, type of oil, concentration of herbal extracts, the balance between water- and oil-loving ingredients (HLB value), and other additives—would affect how stable the emulsion turned out.

The team aimed to make oil-in-water (o/w) emulsions using a mix of selected herbal components. For the oil phase, they used natural extracts like St. John's wort and marigold, as well as wheat germ oil, rose oil, ascorbyl palmitate (a vitamin C derivative), cetyl alcohol, and liquid paraffin. To help mix the oil properly, Span 80® (an oil-loving surfactant) was stirred in using a magnetic stirrer (RH basic, IKA, Staufen, Germany).

The water phase was made by blending distilled water with Tween 80® (a water-loving surfactant) and phenoxyethanol caprylyl glycol, which acted as a preservative. This water phase was then gradually added to the oil mixture while continuously stirring at 1000 rpm with a mechanical stirrer (IKA RW 20, Staufen, Germany) to form the final emulsion. The emulsion was first kept at room temperature for 30 minutes, then stirred again for another 30 minutes to help stabilize the mixture. Carbopol 974® and hydroxypropyl methylcellulose (HPMC) were added to the water phase, respectively, to help with gel formation. Meanwhile, some formulation was made without using any gelling agent at all. A

summary of the ingredients used in each formulation can be found in above Table

To figure out the Hydrophilic-Lipophilic Balance (HLB) of the emulsifier mix, a blend of Tween 80 (which has an HLB value of 15) and Span 80 (with an HLB of 4.3) was used. The HLB was calculated using a basic equation that takes into account the amount of each emulsifier—Tween 80 (Wa) and Span 80 (Wb)—used in the formulation.

$$\text{HLB mixture} = fA * \text{HLBA} + fB * \text{HLBB}$$

Where,

- **HLB mixture:** is the HLB value of the mixture.
- **fA:** is the weight fraction of surfactant A in the mixture.
- **HLBA:** is the HLB value of surfactant A.
- **fB:** is the weight fraction of surfactant B in the mixture.
- **HLBB:** is the HLB value of surfactant B.

Solid form:-

1. Herbal Tablet :-

Herbal Tablets are one of the most widely used forms of medicine. They're solid doses made by pressing or molding a mix of active ingredients (the part that treats you) and inactive ones (which help hold everything together or make the tablet easier to swallow).

Out of all the ways medicine can be given, taking it by mouth (orally) is by far the most common—especially when the medicine needs to work throughout the whole body. While injections or IVs (parenteral routes) are necessary in emergencies—like when someone is unconscious or can't swallow—oral medications still make up about 90% of systemic drug use.

Why are Herbal tablets so popular? Well, they're easy to carry, simple to take, and don't usually taste bad. Plus, they keep the medicine safe from things like heat, moisture, and light, which could affect how well it works. They're also great for accurate dosing—you know exactly how much medicine you're getting in each Herbal tablet.

Even though the basic process of making Herbal tablets hasn't changed much over the years, technology has come a long way. Today, we understand more about how powders compress and how that impacts the way medicine is released in the body. Thanks to modern machines, tablets can

now be made faster, more consistently, and more efficiently.

And they're not all the same shape! While many are round or disc-shaped, Herbal tablets can also be oval, oblong, triangular, or even cylindrical. Their size and weight depend on how much medicine is inside and how the tablet is meant to be taken.

There are two main types:

Molded Herbal tablets:- which are usually made in small batches.

Compressed tablets :- which are made on a large scale in factories.

Table :- 3 Formulation table of herbal tablet

Sr. No.	Ingredient	F1	F2	Activity
1	Clove	100	-	Anti microbial,Anti oxident
2	Cinnamon	-	100	Anti inflammatory
3	Lactose	290	290	Diluent (excipient)
4	Mannitol	-	-	Diuretic
5	Sodium saccharine	2	2	Artificial sweetener
6	Talc	4	4	Lubricants & Diluent
7	Magnesium stearate	4	4	Anti adherent

Method of Preparation :-

To make the Herbal tablets containing clove and cinnamon, the direct compression method was used. Along with the active ingredients, lactose act as a diluent, magnesium stearate was added as a lubricant, and talc helped improve the flow of the powder (glidant).

All the ingredients, as listed in Table 1, were carefully weighed and passed through a sieve no. 20 to ensure they were evenly sized. The ingredients—except for talc and magnesium stearate—were first mixed using the geometric dilution technique for about 15 minutes to get a uniform blend.

After that, talc and magnesium stearate were added and mixed thoroughly with the powder. The final mixture was then compressed into 400 mg tablets using a single rotary tablet press (Model KI-150, Khera Instruments Ltd., New Delhi, India).

2. Herbal Capsule:-

Introduction:-

Herbal Capsules are one of the most versatile ways to deliver medicine. They're solid shells, usually made from gelatin, that hold the actual drug inside. This drug can come in many forms—powder, liquid, or even a semi-solid paste.

In most cases, Herbal capsules are taken by mouth and swallowed whole. However, in some situations, they can also be given through other routes, like rectally or vaginally.

The Herbal capsule shell itself can be hard or soft, which depends on the ingredients and the purpose of the medicine.

Herbal Capsules are often marked with the manufacturer's name and a product code, making them easy to recognize.

Thanks to their smooth and slippery surface, they slide down the throat with ease, which patients usually appreciate.

They're a popular choice in medicine because most people find them convenient and comfortable to take.

From a production standpoint, making capsules is straightforward and efficient.

They're versatile too—able to hold oily substances or semi-solid preparations.

Once taken, capsules break apart quickly in the body, allowing the medicine to be absorbed faster.

This quick breakdown helps speed up the release of the drug, so it can start working sooner

History:-

Capsules have an interesting history that goes back to 1830, when Joseph Gerard Auguste Dublanc and François Achille patented the very first ones, made from soft gelatin. A few years later, in 1846, Jules Lehuby introduced the concept of two-piece hard capsules—the kind we still use today. Back then, everything was made by hand, which made it tricky to get the two pieces to fit together perfectly. This changed in 1931, when Arthur Carlton invented a machine for making hard capsules, and remarkably, today's manufacturing techniques are still based on his original design.

Method & preparation of Herbal capsule:-

1. Preparing the Herbs:-

Start by picking the parts of the plant you need—this could be the leaves, roots, flowers, or a mix of them.

Spread them out to dry completely, as removing all the moisture helps keep them fresh for longer and prevents spoilage.

Once they're fully dried, grind them into a fine powder using a grinder or mill, ready for use in your preparations.

2. Blending and Granulation:-

Blending: Start by mixing the herbal powder with other helpful ingredients, such as binders like starch or lactose, diluents like cellulose, and lubricants such as magnesium stearate. These additions make the powder flow more smoothly and press into tablets more easily.

Granulation (optional): If you want the mixture to flow and fill even better, you can granulate it. This can be done either by wet granulation, where a binder solution helps form small clumps, or by dry granulation, using techniques like slugging to compress the powder without any liquid.

3. Encapsulation:-

Machine Filling: For larger batches, a capsule-filling machine can be used to accurately measure and pack the prepared powder blend into empty capsules, which are usually made of gelatin or HPMC (a plant-based alternative).

Manual Filling: When making smaller batches, you can fill the capsules by hand or use a simple manual capsule-filling tool to get the job done.

Herbal Granules:-

Introduction:-

Herbal Granules are products, supplements, or preparations designed to help detect, manage, or prevent a variety of health problems. In simple terms, they're foods or food-based products that offer therapeutic benefits, support overall wellness, and can help slow or even reverse the progression of certain diseases.

The term granule traces back to the Latin *granulatum*, meaning a grainy mixture, and is related to "granulated" in English. In the pharmaceutical world, granules are made by combining fine particles into larger, more structured clusters through a process called granulation. These typically range from 0.2 to 0.4 mm in size, which is ideal for binding and compressing during production. This process not only helps the particles blend evenly but also improves the quality and effectiveness of the final medicine.

Herbal granules stand out for being easy to take, stable, and capable of releasing active ingredients in a controlled way. One growing trend is polyherbal formulations, where Granule from multiple plants are combined to create a stronger, more balanced effect. These blends are being explored for benefits like boosting immunity, reducing inflammation, and fighting oxidative stress—a major contributor to many diseases. Compared to single-herb products or synthetic drugs, they can offer wider health advantages with fewer side effects.

Herbal Granulation plays a key role in making solid dosage forms like Herbal tablets and Herbal capsules. By increasing particle size and ensuring even mixing of ingredients, it improves the flow, compressibility, and stability of the product—making sure the medicine remains effective from production to storage and use.

Other :-

1. Herbal Cream:-

Introduction :-

Today, herbal extracts play a major role in cosmetic products because of their ability to enhance appearance and support personal care. These herbal cosmetics can be grouped either by their dosage form—such as creams, powders, soaps, or solutions—or by the body part they are designed for, including skin, hair, nails, teeth, and oral care.

Among the various forms, creams are the most common. They are semisolid emulsions applied to the skin or mucous membranes. One popular type is the vanishing cream—a light, oil-in-water emulsion that quickly blends into the skin without leaving behind greasiness. Depending on how much water or oil is used, creams can be easily washable and non-sticky, or thicker and more adhesive. Their ease of application, non-greasy nature, and patient-friendly feel make them one of the most widely used topical dosage forms.

For centuries, traditional systems of medicine were the backbone of healthcare

worldwide, long before modern allopathy became established. With the advancement of biology and chemistry, allopathic medicine gained quick acceptance and now dominates healthcare due to its scientific validation and therapeutic results. Still, traditional herbal remedies—especially polyherbal formulations—remain widely valued, largely because they are considered safer compared to modern single-molecule drugs, which can sometimes cause serious side effects.

The skin, being the body's outermost defense, is also the first to show visible signs of aging. While aging is a natural process, changes in the skin often affect self-confidence and overall psychological well-being. Many premature signs of aging result from environmental factors, with excessive sun exposure being one of the most significant causes. Ultraviolet (UV) radiation promotes the formation of reactive oxygen species, which accelerate skin damage and aging. To protect against this, photochemoprotective agents are used, as they help shield the skin from UV-induced oxidative stress and preserve a healthier, youthful appearance.

Table :-4 Formulation table of herbal cream

Sr.No	Ingredient	Quantity (%)	Activity
1	Stearic acid	17%	Emulsifier/emollient
2	Potassium hydroxide	0.5%	PH Adjuster
3	Sodium carbonate	0.5%	Emulsifying Agent
4	Alcoholic Herbal extract	4.5%	Anti microbial/Anti oxidant
5	Glycerine	6%	Humectant
6	Perfume	0.5%	Favouring Agent
7	Water	71%	Solvent

Method of Preparation :-

The preparation of vanishing herbal cream was carried out in the following steps:

1. Alcoholic extract of crude drugs :-

Five grams of each powdered crude drug were placed in a conical flask, followed by the addition of 100 ml of ethanol. The flask was covered with aluminum foil and kept aside for maceration for five days.

2. Oil phase :-

Stearic acid (17%), potassium hydroxide (0.5%), and sodium carbonate (0.5%) were weighed and taken in a porcelain dish. The mixture was then heated to about 70°C until it melted completely.

3. Aqueous phase :-

The alcoholic extract (4.5%) prepared in step 1, along with glycerin (6%) and water (71%), was placed in another porcelain dish and heated separately to 70°C.

4. Combining the phases :-

The aqueous phase was slowly added to the oil phase with constant stirring, while keeping the temperature steady at 70°C. Once mixing was complete, the formulation was cooled to room temperature under continuous stirring. Perfume (0.5%) was added at the final stage, and the finished cream was transferred into suitable containers.

2. Herbal Inhalation :-

Introduction :-

Herbal Inhalation therapy is a commonly used treatment for respiratory diseases that cause airway obstruction, such as asthma and chronic obstructive pulmonary disease (COPD). Asthma,

which is a serious global health issue, usually begins in childhood, and many patients need to continue inhaled medications throughout their lives. The number of asthma cases is steadily increasing worldwide. On the other hand, COPD generally develops later in life, and patients often suffer from severe airway obstruction, requiring long-term use of inhaled medicines at higher doses.

Although inhaled drugs are highly effective in controlling these conditions, their prolonged and high-dose use can have unwanted effects on oral tissues. Unlike oral therapy, inhaled medications are given in very small doses, yet a large portion of the drug remains in the mouth and throat. This drug deposition may disrupt the normal physiology and health of oral tissues.

Table :-5 Formulation table of herbal inhalation

Sr. No	Ingredient	Activity
1	Eucalyptus oil	Anti septic , expectorant
2	Peppermint oil	Cooling, Decongestant
3	Camphor	Decongestant
4	Menthol	Cooling, Mild Analgesic
5	Tulsi	Antimicrobial
6	Ginger	Anti-inflammatory
7	Clove	Antibacterial, Analgesic
8	Ajwain	Bronchodilator
9	Turmeric	Anti-inflammatory, Antioxidant
10	Lavender oil	Relaxant

Preparation of Inhalers:-

Inhalers are carefully designed drug delivery systems that provide medication directly to the lungs, making them highly effective for respiratory conditions like asthma and chronic obstructive pulmonary disease (COPD). Preparing an inhaler involves several steps to ensure the medicine is properly formulated, stable, and easy for patients to use.

● Formulation of the Drug :-

The active pharmaceutical ingredient (API) is first selected and tested for its suitability for inhalation.

Excipients, such as stabilizers or propellants, are added to improve the performance, stability, and delivery of the medicine.

● Choice of Inhaler Type :-

Metered-Dose Inhalers (MDIs): Use a pressurized canister with a propellant to release a measured dose of medicine.

Dry Powder Inhalers (DPIs): Deliver powdered medication, usually activated by the patient's breath.

Nebulizers: Convert liquid medicine into a fine mist for inhalation.

- **Manufacturing Process:-**

For MDIs, the drug and propellant are mixed and filled into a pressurized canister, then sealed with a metering valve to ensure accurate dosing.

For DPIs, the powdered drug is blended with carriers like lactose and filled into capsules, blisters, or device reservoirs.

For nebulizers, the drug is prepared in liquid form and packaged in sterile vials.

- **Quality Control:-**

Each batch undergoes strict testing for dose uniformity, particle size, aerosol performance, and sterility (when required).

Devices are also checked for durability, leakage, and ease of use.

- **Packaging and Labeling :-**

Inhalers are packaged in protective containers to avoid contamination and degradation.

Clear labeling provides instructions on storage, dosage, and proper usage.

3. Herbal Patches:-

Introduction:-

In recent years, herbal patches have gained attention as an innovative dosage form for delivering plant-based medicines. Unlike conventional oral or topical formulations, patches offer a simple, non-invasive way of releasing active compounds directly through the skin into systemic circulation. This approach bypasses the gastrointestinal tract, avoiding problems such as poor solubility, first-pass metabolism, or gastrointestinal irritation that often limit the effectiveness of herbal remedies.

The demand for herbal patches has increased due to their convenience, steady drug release, and patient-friendly design. They are especially useful for individuals who find it difficult to take tablets, capsules, or syrups on a regular basis. By combining traditional herbal knowledge with modern transdermal drug delivery technology, herbal patches have the potential to improve therapeutic outcomes in conditions such as pain management, inflammation, stress relief, and skin-related disorders.

Method of Preparation of Herbal Patches:-

The preparation of herbal patches involves several well-defined steps to ensure uniformity, stability, and controlled release of the herbal

extract. A generalized method includes the following stages:

1. Selection and Extraction of Herbal Ingredients:-

Choose suitable medicinal plants based on the intended therapeutic action.

Prepare extracts using techniques like maceration, percolation, or solvent extraction, followed by concentration and drying.

2. Formulation of the Patch Matrix:-

A suitable polymer base (such as hydroxypropyl methylcellulose, polyvinyl alcohol, or chitosan) is selected to form the patch.

Plasticizers (like glycerol or polyethylene glycol) are added to improve flexibility.

The herbal extract is incorporated into the polymer blend to ensure even distribution.

3. Casting or Molding:-

The prepared mixture is poured into molds or spread on a flat surface to form a thin film.

The film is dried under controlled conditions to remove solvent or moisture without degrading the herbal components.

4. Backing and Adhesive Layer:-

A backing layer is applied to provide support and protect the patch from external factors.

An adhesive layer may be included to ensure the patch sticks properly to the skin without causing irritation.

5. Cutting and Packaging:-

The dried film is cut into patches of uniform size and weight.

Each patch is packaged in moisture-proof and light-resistant material to maintain stability.

REFERENCES :-

- [1]. WHO. (2000). General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine. World Health Organization, Geneva.
- [2]. Kokate, C. K., Purohit, A. P., & Gokhale, S. B. (2021). Pharmacognosy. 51st Ed. Pune: Nirali Prakashan.
- [3]. Evans, W. C. (2009). Trease and Evans' Pharmacognosy. 16th Ed. Saunders Elsevier.
- [4]. Pandey, M. M., Rastogi, S., & Rawat, A. K. S. (2013). Indian traditional ayurvedic system of medicine and nutritional

- supplementation. Evidence-Based Complementary and Alternative Medicine, 2013, 376327.
- [5]. Bent, S. (2008). Herbal medicine in the United States: review of efficacy, safety, and regulation. *Journal of General Internal Medicine*, 23(6), 854–859.
- [6]. Mukherjee, P. K. (2019). *Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals*. 2nd Ed. New Delhi: Business Horizons.
- [7]. Ekor, M. (2014). The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in Pharmacology*, 4, 177.
- [8]. Patwardhan, B., Warude, D., Pushpangadan, P., & Bhatt, N. (2005). Ayurveda and traditional Chinese medicine: a comparative overview. *Evidence-Based Complementary and Alternative Medicine*, 2(4), 465–473.
- [9]. Fabricant, D. S., & Farnsworth, N. R. (2001). The value of plants used in traditional medicine for drug discovery. *Environmental Health Perspectives*, 109(Suppl 1), 69–75.
- [10]. Williamson, E. M. (2013). *Pharmacological Methods in Phytotherapy Research*. Chichester: Wiley.
- [11]. Bhutani, K. K., & Gohil, V. M. (2010). Natural products drug discovery research in India: Status and appraisal. *Indian Journal of Experimental Biology*, 48, 199–207.
- [12]. Heinrich, M., Barnes, J., Gibbons, S., & Williamson, E. M. (2018). *Fundamentals of Pharmacognosy and Phytotherapy*. 3rd Ed. Elsevier.
- [13]. Jain, N. K. (2018). *Pharmaceutical Product Development*. CBS Publishers.
- [14]. Goyal, R. K. (2016). *Elements of Pharmacology*. B.S. Shah Prakashan.
- [15]. Kamboj, V. P. (2000). Herbal medicine. *Current Science*, 78(1), 35–39.
- [16]. Sharma, A., Shanker, C., Tyagi, L. K., Singh, M., & Rao, C. V. (2008). Herbal medicine for market potential in India: an overview. *Academic Journal of Plant Sciences*, 1(2), 26–36.
- [17]. Gupta, P. D., & Daswani, P. G. (2014). Current trends of herbal medicines in pharmacological research. *Journal of Pharmacognosy and Phytochemistry*, 3(4), 193–202.
- [18]. Panda, S. K., & Mishra, S. (2015). Health traditions of Sikkim Himalaya. *Indian Journal of Traditional Knowledge*, 14(2), 220–230.
- [19]. EMA. (2010). *Guideline on Quality of Herbal Medicinal Products/Traditional Herbal Medicinal Products*. European Medicines Agency.
- [20]. Mukherjee, P. K., Harwansh, R. K., Bahadur, S., Banerjee, S., Kar, A., & Chanda, J. (2017). Development of Ayurveda – Tradition to trend. *Journal of Ethnopharmacology*, 197, 10–24.
- [21]. Singh, S., & Sharma, P. (2014). Transdermal drug delivery of herbal drugs: A review. *International Journal of Pharmaceutical Sciences and Research*, 5(1), 12–20.
- [22]. Dhiman, A., Nanda, A., & Ahmad, S. (2012). Herbal cosmetics: a safe and effective approach. *International Journal of Pharmaceutical Sciences Review and Research*, 13(1), 67–75.
- [23]. Kalariya, M., Bhuva, R., & Sheth, N. (2013). Formulation and evaluation of herbal gel. *International Journal of Pharmacy and Pharmaceutical Sciences*, 5(3), 33–38.
- [24]. Pal, S. K., & Shukla, Y. (2003). Herbal medicine: current status and the future. *Asian Pacific Journal of Cancer Prevention*, 4, 281–288.
- [25]. Kesarwani, K., & Gupta, R. (2013). Bioavailability enhancers of herbal origin: an overview. *Asian Pacific Journal of Tropical Biomedicine*, 3(4), 253–266.