IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, April 2025
Impact Factor: 7.67

A Review on " Cosmetic Science"

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Abstract: *This abstract discusses the subject of cosmetic science. Cosmetic science is the study of substances and mixtures used to improve the appearance and well-being of skin and hair. This multidisciplinary field combines biology, chemistry, and aesthetics. It addresses the prerequisites for obtaining a license to produce, package, market, import, and export cosmetics. It includes information on the equipment used to make cosmetics.*

Keywords: Cosmetic science, Understanding Basic Concept, Instruments used in cosmetic science

I. INTRODUCTION

Introduction to Cosmetic Industry

The cosmetics industry in India is worth billions of dollars and is too big to ignore. Research indicates that the market for beauty and personal care products is expected to rise at a compound annual growth rate (CAGR) of 6.32%, from USD 24.53 billion in 2022 to USD 33.33 billion by 2027.

Since the manufacturing and digital sectors have grown significantly, India has a huge need for cosmetics. Being one of the top countries with booming economies, India has made room for the hair care industry to flourish rapidly. Strong market growth over time has been enabled by the growing demand for organic and herbal hair care products, such as conditioners, oils, gels, and shampoos with olive oil. This is supported by the increasing number of market participants with well-known brands that consumers gladly embrace, which explains the high penetration of common hair care products like shampoo and oil.

Drug and Cosmetic Act 1940 and 1945

The Indian parliament passed the Drugs and Cosmetics Act, 1940, which governs the country's drug import, production, and distribution. Ensuring that medications and cosmetics sold in India are safe, effective, and meet state quality standards is the act's main goal. The relevant Drugs and Cosmetics Rules of 1945 include provisions for classifying drugs according to specified schedules as well as instructions for each schedule's storage, sale, display, and prescription.[1]

Requirement for obtaining license

The Central Government-appointed Central Licensing Authority is in charge of regulating the cosmetics manufacturing industry in all Indian states. Licenses and Registrations pertaining to the Drugs and Cosmetics Act of 1940 Cosmetics production and license renewals have been authorized by the corresponding State Licensing Authorities that the State designated Governments use to limit the import of cosmetics through registration.

Requirements for Labelling of Cosmetics

Regulation 1223/2009 imposes some rules on the labelling of cosmetic products, and it became operative throughout Europe in July 2013. The purpose of the indicators on the label is to ensure that consumers are protected from commercial aspects, facilitate the differentiation between the proper use and functionality of cosmetics, and, most importantly, improve safety. It should also enable the prompt tracing of product details and any toxicological information. However, incorrect use of this tool usually leads to confusion between medical equipment, pharmaceuticals, cosmetics, and biocides.This article explains the specific purpose of cosmetic labels, which is to provide information about the usage of specific types of "controversial" chemicals and on the true notions of cosmetic product quality. However, a large number of online users view it in a fantastical way, thinking that they can determine

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the quality of a cosmetic product simply by looking at the ingredients list. In fact, when properly understood, cosmetic labels are a useful resource for the expert examination of unfavourable cosmetic reactions.[2]

Active Ingredient	They are arranged in order to intended action of anti-hairfall, anti- inflammatory, Anti-aging, anti- oxidant
Chemical Compound	The potential of the substances is determined by their chemical composition influence on one's health.
Artificial or Natural	Ingredients might be derived from natural sources or manufactured artificially.

List of Ingredients

Here are some more things to consider when reading the labels of cosmetic products :

- Country of origin: Imported cosmetics must specify their country of origin.
- Minimum durability: The Period After Opening (PAO) or minimum durability date must be specified.
- Precautions: If any safety precautions are required when using the product, they must be noted.
- Batch number: The batch number facilitates the traceability of the product.
- Function: It should be indicated what the product is used for, unless the presentation makes it clear. Emulsifiers, water, and preservatives are common ingredients in cosmetics.[3]

cGMP of Cosmetics (Current Good Manufacturing Practice):

The standards known as Current Good Manufacturing Practices (cGMP) are suggested by the appropriate authorities for the approval and licensing of the production and distribution of cosmetics. These rules set the minimal standards that producers must follow to guarantee consistently high-quality goods, batch after batch. Every cosmetic company has an obligation to ensure the quality, safety, and efficacy of their products while adhering to laws that regulate the cosmetics sector. The International Organization for Standardization (ISO) and the Food and Drug Administration (FDA) are two regulatory bodies that enforce Good Manufacturing Practices (GMP) for cosmetics. Protection of customers from possible harm is the main goal of GMP

GMP may also include tasks like:

• Validating cleaning and sanitation procedures,
• Verifying tools, procedures, and activities,
• Computer systems, and analytical techniques[4]

ICH GUIDELINES :

- Facilities: Must be of a suitable size and design for the placement, storage, and cleaning of equipment.
- Equipment: Must be built from materials that are suitable to prevent corrosion, build-up, or contamination.
- Personnel: Must be properly trained and educated to perform assigned duties.
- Raw materials: Must be well-organized and labelled with batch information.
- Testing samples: To ensure compliance with quality standards, samples of raw materials, in-process samples, and finished products are necessary.
- Documentation: Written instructions for manufacturing and control, including formulations and processing details.
- Complaints: A record of customer complaints should be kept.
- Quality Management System: To identify and carry out corrective and preventive actions (CAPA), a Quality Management System (QMS) ought to be utilized.
- Change control: Standard operating procedures should be established to ensure that information is communicated in a courteous manner and that the organization remains professional.
- Internal Audit: There should be a defined process in place for carrying out internal.Audits

The following criteria are outlined in the International Conference on Harmonization's (ICH) stability study guidelines:

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- Test conditions: At least 12 months of long-term testing should be conducted at 25 °C ± 2 °C/60% RH ± 5% RH or 30 °C ± 2 °C/65% RH ± 5% RH. For at least six months, intermediate testing should be carried out at 30 °C ± 2 °C/65% RH ± 5% RH, and for at least six months, accelerated testing should be carried out at 40 °C ± 2 °C/75% RH ± 5% RH.
- Test types: Results from physical, chemical, biological, and microbiological tests should all be included in stability data.
- Batch selection: At least three main batches that share the same formulation and container closure mechanism as the suggested marketed product should be selected.
- Stability monitoring: The stability monitoring program should include at least one production batch of Active Pharmaceutical Ingredient (API) annually.
- Data analysis: Data analysis can assist in determining the suitability of the data in multi-factor, full-design studies.
- Reporting: Every piece of generated data needs to be compiled, updated, and immediately accessible.[5]

Knowledge about Body Cavities & Related Problem :

- Skin issues: The skin can be affected by a variety of conditions, including athlete's foot, eczema, and acne. Both psoriasis and skin cancer.
- Nail disorders: Shoe wear, hygiene, and nail tool use can all contribute to nail issues. Nail fungus onychomycosis, nail detachment known as onycholysis, and other common nail issues together with psoriasis of the nails.
- Oral and nail mucosa : It is possible for genodermatoses to affect the oral mucosa and nails. These conditions affect the teeth, skin, hair, sweat glands, and nails. The symptoms of the oral mucosa might vary from benign growths to malignant tumours.
- Issues with body cavities: If fluid builds up in these cavities, the body may experience strain. For example, hydrocephalus is a disorder caused by an increase in CSF fluid in the cerebral cavity.
- Ectodermal dysplasias: These rare conditions affect the skin, hair, teeth, sweat glands, nails, and immune system. There are over 180 different types of ectodermal dysplasias that have been identified.

The integumentary system, which includes skin, hair, and nails, is the body's outermost layer that protects the body fluids, wounds, and pathogens.[6]

Cleansing and Care needs for Body :

- Face: Wash your face with a gentle, abrasive-free cleanser that is alcohol-free. Using lukewarm water and your fingertips, apply the cleaner. Avoid scrubbers as they may cause skin irritation. Additionally, you should exfoliate your face once a week and apply sunscreen daily.
- Teeth: Brush your teeth twice a day using a soft-bristled toothbrush and fluoride toothpaste. To eliminate bacteria in the spaces between your teeth and beneath your gums, dispose of it once a day. Additionally, you can have a dentist clean your teeth every six months.
- Hands: Clean your hands after handling raw meat, eating or drinking, sneezing, blowing your nose, handling trash, caring for animals, or providing medical attention..
- Feet: To get rid of odorous feet, wash them frequently. Additionally, you can keep your feet dry and clean.
- Nail: Use a nail file or emery board to file your nails. You can use an orange stick to gently push back your cuticles in addition to moisturizing your nails and cuticles.
- Body: Take regular baths and showers to eliminate sweat and dirt and to prevent body odour. Applying deodorant to your underarms is something you can do after taking a shower. If you perspire more than once a day, you might need to take a shower. You can also wash your bed linens in hot water once or twice a week
- Eye: To help relieve lash crusts, place a sterile cotton ball over your lids for a little while. Next, transfer the free fluids from the inner angle of your eye to the outer angle.

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- Ears: You can wipe the external ear with a sponge cloth while taking a bath. Disregard the use of pins. Don't clean your ears with toothpicks, sticks, or earphones to prevent harming your eardrum.[7]

Formulation Consideration for Cosmeceuticals :

Formulating and evaluating cosmetic products requires an understanding of the physical and chemical properties of materials as well as the interactions that occur during the formulation process. [8]

The product is examined for several aspects as part of the evaluation process, such as

Appearance	The colour , opacity, pearl fragrance, and roughness of the product.
pH	The pH of the product is measured with a pH meter.
Homogeneity	The product's homogeneity is confirmed by touch and appearance.
Viscosity	The product's viscosity is measured using a Brookfield viscometer.
Spreadability	The capacity of the product to spread is evaluated.
Washability	An analysis of the product's cleaning capabilities is conducted.
uniformity	The consistency of the product is assessed.
Irritancy	The product's redness and other irritability are assessed. For example, inflammation

Understanding Basic Concept

Preparation of SOPs :

The following considerations should be made before developing Standard Operating Procedures (SOPs) for machinery, instruments, and equipment in order to guarantee regulatory compliance:

- SOP's goal is: Standard operating procedures should be developed to ensure that workers perform consistently and at a high standard. activities, helping to ensure that rules are followed. SOPs are not required to be written only because the law requires it.
- SOP content: Guidelines on what needs to be done and how to do it so that everyone knows about it should be included in SOPs. Industry policies and company strategy should serve as the foundation for SOPs. Principles and regulations
- Visual aids: Flow charts, process diagrams, colour codes, and safety and hazard symbols are examples of visual aids that can be utilized to enhance understanding and application of SOPS.
- SOP components: Equipment, flaw detection, and pre-start inspections All SOPs can be incorporated. equipment, and avoiding any alterations or modifications

Process of creating SOPs :

To create a SOP, follow these steps:

- Set goals
- Identify the creators and interested parties.
- Determine the final user;
- Define the scope and format. Assemble all pertinent data.
- Look over the documentation.

Types of Equipment and Quality Control :

- Manufacturing equipment: Mixers, grinders, cooling devices, emulsifying and dispersing devices, and moulding and filling tools.
- Equipment for laboratory quality control :Pipettes, analytical transmitters, pH and ORP analyzer, moisture analyzer, platform scales, calibrating scales, checkweigher systems, metal detection systems, weighbridge and rail scale systems, thermal analysis excellence, and calorimeters for reactions.
- Quality control instruments :High pressure thin-layer chromatography, gas liquid chromatograph, and meters for infrared and ultraviolet spectrophotometers, liquid chromatographs, and calorimeters for reactions

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- Filling apparatus: The type of filling apparatus to be used depends on the product. accessible at different levels of automation.
- Mixers: Industrial emulsifying mixers use powerful blades to produce tiny cosmetic droplets. components that result in a stable emulsion.
- Stability testing: Evaluates a product's ability to hold up over time through simulation. Ambient elements like temperature fluctuations and humidity Microbiological testing is also carried out to search for potentially harmful microorganisms such as bacteria, yeast, and germs.[9]

INSTRUMENTS USED IN COSMETIC SCIENCE

1. Texture analyzer
2. Brookfield viscometer
3. Capsule Filling machine
4. Spray dryer
5. Freeze dryer
6. Homogenizer
7. Ultra sonicators
8. Colony counter

Texture analyzer: A texture analyzer is a tool for measuring texture that can move up or down to compress or stretch a sample. You can evaluate and control the factors affecting a product's quality, handling, processing, and shelf life with a texture analyzer. product, giving the manufacturer insight into customer behaviour and standards of acceptability. A texture measurement system's concept involves carefully changing a test sample physically and measuring the result. The force response's properties, which are connected with sensory texture attributes, are determined by the sample's mechanical properties . A texture analyzer can replace human sensory evaluation by providing a numerical value that can be used as a quality indicator . Assurance standards for evaluating products.

Fig no.1 [Texture Analyzer]

Advantages of Texture Analyzer :

- Objective and measurable texture measurement.
- Facilitating reliable quality control. Supporting product development.

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- And improving processing conditions for a range of sectors, including food, medicine, and cosmetics

Disadvantages of Texture Analyzer :

- High equipment expenditures.
- The requirement for standardized sample preparation.
- And the possibility that they don't always precisely match human sensory perception. [10]

Brookfield viscometer : The Brookfield viscometer gives producers important information about how a material's viscosity behaves, which is essential for raising the calibre of their output. Knowing a material's rheological characteristics is useful when predicting its pourability, how well it will work in a dipping or coating operation, or how readily it will be handled, processed, or used. When rheology interacts with other product dimensions to cause changes in colour, density, stability, solids content, and molecular weight, viscosity measurement is frequently the most accurate or useful technique.Because of their versatility, reliability, user-friendliness, and superior service, Brookfield viscometers are a favourite around the world. The accuracy of each Brookfield Viscometer is within ±1.0% of the range being used, and its repeatability is within ±0.2%. Test results can be replicated.

Fig no. 2 [Brookfield Viscometer]

Advantages of Brookfield Viscometer :

- Ease of use.
- Durability.
- Respectable accuracy.
- Adaptability for measuring viscosity in a range of applications, such as liquids, pastes, and suspensions, with accessories for specific requirements.

Disadvantages of Brookfield Viscometer:

- Limitations in detecting extremely low viscosities because of mechanical friction.
- Sample evaporation risk.
- Difficulties in attaining precise temperature control.[11]

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Capsule filling machine :The pharmaceutical industry uses this kind of machine to refill empty capsules. The capsule filling machine is also known as an encapsulation machine. Metal equipment used in the pharmaceutical industry to fill empty capsules with powdered active ingredients is used to make capsules. There are various kinds of capsule filling machines available. There are three types of capsule filling machines: manual, semi-automated, and automatic. Filling the capsule with powder and then locking it is how the capsule filler works.A capsule filler machine is always used to fill the majority of capsules. The capsule filling machine instantly ejects the capsule after it has been filled and fastened inside. types of capsule-filling machinery A machine that automatically fills capsules: This apparatus uses the granules in their dry forms to automatically fill the capsule. Many of the capsules are used in a variety of industries. Their nature of production is extremely strong. Machine for Semi-Automatic Capsule Filling: As the name suggests, this machine has both automated and partially manual functions. Their equipment is very easy to use and has a very simple design. Using it is extremely hygienic. Manual Capsule Filling Machine: The majority of manual capsule machines are used by small pharmaceutical companies. pharmaceutical industries since they produce fewer capsules, allowing for manual labour. It doesn't need electricity and can be operated manually.

Fig no. 3[Capsule filling machine]

Advantages of Capsule-filling machine :

- High production speeds.
- Accurate and reliable filling.
- The capacity to encapsulate different ingredients all contribute to better product quality and efficiency.

Disadvantages of Capsule-filling machine :

- High start-up expenses.
- Specific maintenance requirements.
- Restrictions on filling specific items, possible effects on product stability and quality.[12]

Spray dryer : Using a hot gaseous drying medium, spray drying is a one-step continuous unit process that transforms liquid atomization into droplets that are subsequently dried into individual particles. Spray dryers, powder recovery/separator, and exhaust air cleaning programs are comprised of an air heater, an air dispenser, an atomizer, a drying chamber, and a feed pump. Three steps must be completed in a spray dryer before drying is finished: Microbial

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evaporation and spray-air mixing are atomized. Air separation of the dry product at exit the final composition of a product after it has been dried in a spray dryer depends on how the device is made and operates. The meal's physical and chemical properties.

Fig no. 4[Spray Dryer]

Advantages of Spray Dryer :

- Creating stable, fine powders.
- Allowing for the regulated release of active components.
- Guaranteeing uniformly smooth formulation textures.
- They also improve the quality of the final product by enabling exact control over particle size and form.

Disadvantages of Spray Dryer :

- Potential heat damage to delicate materials.
- Trouble regulating particle size.
- Energy inefficiency necessitate careful evaluation for particular compositions.[13]

Freeze dryer :This process is also known as lyophilization. Water must be frozen before being extracted from the sample, first by sublimation and subsequently by desorption. A dehydration dryer, also known as a lyophilizer or freeze dryer, is a machine that uses heat to evaporate liquids at or below their freezing point. Freeze drying is used in the production of pharmaceuticals and other goods. Long-term storage of biologicals that are thermolabile or otherwise unstable in water or moisture intervals, but that is stable when dry. In freeze-drying, the sublimation principle is applied. where water bypasses the liquid state and goes directly from the solid (ice) state to the vapour state. At temperatures and pressures below triple water's edge, water can sublimate. The ideal temperature and pressure for a material to maintain its equilibrium states as a liquid, solid, or gas is known as the degree of heat. The triple point of pure water is 4.58 mm Hg and 0.01°C.)

After the substance has been frozen, it is heated under a high vacuum using radiation, conduction, or both until the frozen liquid sublimates and only the dry, non-volatile portions of the original material are left. After first freezing the item to be dried, it is heated under a high vacuum utilizing radiation, conduction, or both, until the frozen liquid sublimates and only the dry, non-volatile portions of the original material are left.

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Fig no. 5[Freeze Dryer]

Advantages of Freeze Dryer :

- Improved product stability and shelf life.
- Protection of delicate ingredients.
- The possibility of developing formulations that are lightweight and simple to use.

Disadvantages of Freeze Dryer:

- Expensive.
- Energy-intensive.
- Time-consuming .
- Perhaps damaging to delicate substances.[14]

Homogenizer : A homogenizer is a piece of equipment used in enterprises and laboratories to homogenize a wide range of materials, including tissue, plants, food, soil, and many more. For disruption, numerous models have been created utilizing a range of physical technologies. Even in contemporary laboratories, the mortar and pestle, which has been in use for thousands of years, is a standard tool. High pressure, rotor stator mechanical systems, ultrasonic treatment (also known as sonication), blender-type devices, bead mills, and many other physical forces are used in modern procedures.

Fig no. 6[Homogenizer]

Advantages of Homogenizer :

- Improved texture and consistency.
- Increased product stability.
- The capacity to produce finer, more consistent particle sizes, which could improve blending and lessen the need for specific additives.

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Disadvantages of Homogenizer :

- Material wear.
- Possible heat generation.
- High cost.
- The requirement for specialist maintenance. [15]

Ultrasonicator : Sound energy is used to stir up particles in a sample using an ultrasonic bath or ultrasonic probe. We call this process "sonication." In academic, medical, and forensic labs, Ultrasonicators are used to decompose bacteria, spores, cells, or tissue. Vacuum-induced sonication can be used to fragment DNA molecules, break down cell membranes and release contents, homogenize "immiscible" liquids, speed up chemical and enzymatic reactions, and encourage bacteria growth, or extract gaseous substances from liquids Some varieties offer both continuous and pulsed modes of disruption, and they can be accessed remotely or communicate with a computer. Sonicators safeguard people by operating at frequencies higher than human hearing. Look for characteristics that enable repeatability, such as automatic control over the sonotrode length and amplitude and time adjustment.

Fig no. 7[Ultrasonicator]

Advantages of Ultrasonicator :

- Greater bioavailability of active chemicals.
- Better particle size management.
- Improved emulsification.
- All of which contribute to improved product stability and effectiveness.

Disadvantages of Ultrasonicator :

- Possible harm to delicate substances.
- Heat production.
- Equipment expenses.
- Despite the fact that it's an effective method for a number of uses.[16]

Colony counter :A colony counter, also known as a cell counter, is a device that automatically counts the number of cells or colonies in a sample. Cell counters can determine the number of cells, their viability, and an analysis of the distribution of cell width. Colony counters count the number of microbe colonies that have grown on an agar plate derived from a sample. Fluorescent labels or the variation in brightness between the dark and light portions of the plates can be used to count the colony counters. Making Use of Colonies and Cells Counters Both colony counts and cell counters are used in many research labs, including those in the life sciences and cell and molecular biology. Environmental testing, pharmaceutical research, academic labs, and more.

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Fig no. 8[Colony counter]

Advantages of Colony Counter :

- Improved data management.
- Reduced human error.
- Faster throughput
- And increased accuracy—all essential for guaranteeing the safety and quality of products.

Disadvantages of Colony Counter :

- Time consumption.
- Human error .
- The possibility of inaccuracy—particularly in small or closely spaced colonies—make automated counters a superior option for high-throughput labs.[17]]

II. CONCLUSION

In conclusion Understanding the significance of cosmetic science and thematic industry is the aim of the current study. It also aids in understanding the rules and regulations pertaining to cosmetic science. Provide details on Standard Operating Procedures as well. This review's analysis also offers details on the tools utilized in cosmetic science. The benefits and drawbacks of instruments.

REFERENCES

[1]. https://www.researchandmarkets.com/reports/5660354/ india-hair-care-market-outlook-202728 #:~:text=According%20to%20the%20report%2C%20'India,forecast%20period%20year%202027%2D28.
[2]. https://www.indiacode.nic.in/bitstream/123456789/15278/1/drug_cosmeticsa1940-23.pdf.
[3]. Kishor A. Bellad, Basavaraj K. Nanjwade, Meghana s. Kamble. Development of Cosmeceuticals. World journal of pharmacy and pharmaceutical science. 2017, Volume 6, [Issue 4]: 643-691.
[4]. https://www.obelis.net/news/good-manufacturing-practices-gmp-for-cosmetic-producersexplained/
[5]. https://database.ich.org/sites/default/files/Q1A%28R2%29%20Guideline.pdf
[6]. https://www.slideshare.net/slideshow/common-problems-associated-with-oral-cavity-249926546/249926546
[7]. Shubhada S. Pawar, Sanjay K. Bais. Cosmetic Science. International journal of AdvancedResearch science, communication and technology. 2023. Volume 6,[Issue 2] : page no 854-869
[8]. https://www.slideshare.net/slideshow/formulation-requirements-for-ethnic-needs/232048520
[9]. https://www.pharmaguideline.com/2014/10/sop-for-equipment-qualification.html
[10]. https://www.stablemicrosystems.com/BeginnersGuideToTextureAnalysis.html#:~:text= Texture%20Analysers%20are%20used%20to,visit%20our%20Texture%20Properties%20page.

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International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, April 2025
Impact Factor: 7.67

[11]. https://www.brookfieldengineering.com/-/media/ametekbrookfield/modelselection/model-selection-table.pdf?la=en&revision=71437d95-8d3f-457e-9ad1-447bb3ad4df4&hash=0DFF9FB0926E25AB32A96A3A95A8E25D
[12]. https://en.m.wikipedia.org/wiki/Capsule_(pharmacy)
[13]. https://en.wikipedia.org/wiki/Spray_drying#:~:text=A%20spray%20dryer%20takes%20a,moIsture%20quickly%20leaves%20the%20droplets.
[14]. https://www.millrocktech.com/lyosight/lyobrary/what-is-a-freeze-dryer/
[15]. https://microbenotes.com/homogenizer-principle-procedure-parts-types-uses-examples/
[16]. https://www.biocompare.com/Protein-Biochemistry/12989-Sonicators-Ultrasonicators/
[17]. https://www.biocompare.com/Lab-Automation-High-Throughput/11357-Colony-Counters/#:~:text=Colony%20counters%20are%20used%20to,coli%20bacterial%20colonies