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COSMETICS [PH OF SHAMPOOS]

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Abstract

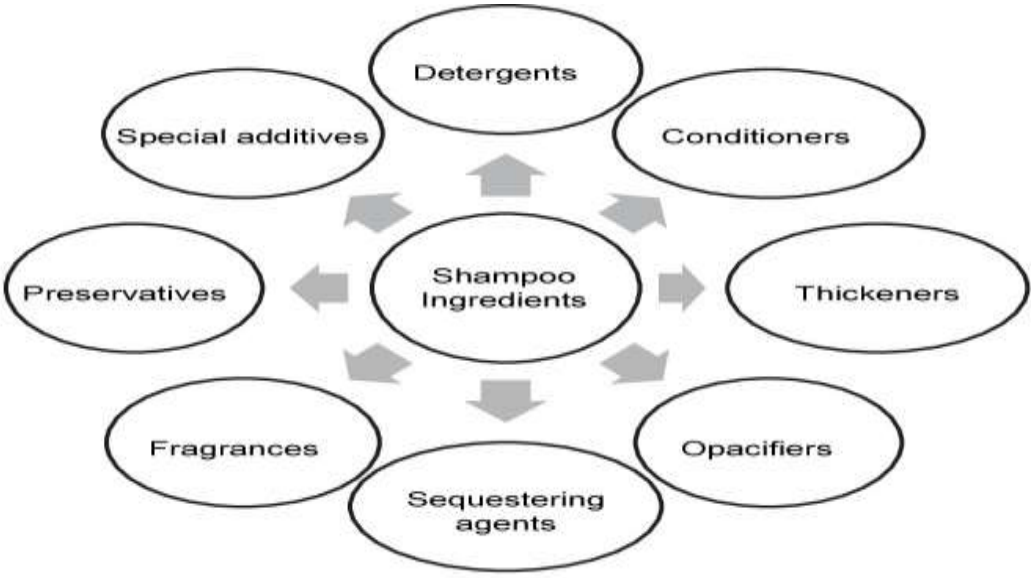
Cosmetic and beauty products, though not essential for physical health, go a long way in providing mental well-being and confidence, and hence are used substantially. Increasing utilization of varying cosmetic products leads to a multitude of adverse effects. There are more awareness studies on the same are currently trending. Bibliometrics has become a prominent and growing field of research in recent years. The aim of this research was to assess bibliometric features and conduct systematic trend analysis on the literature available on cosmetics' adverse effects. We analysed all the published documents that included the keywords "cosmetics" and "adverse effects" between 1957 and 2021. We performed a detailed scientometric and bibliometric assessment in this field. A total of 4127 articles were retrieved from the databases provided by Scopus, which were original articles.

KEY WORDS

- Acidic Topical products
- Cosmetics
- Skin PH

INTRODUCTION

Shampoo in simple terms is a hair care product designed to clean the scalp skin along with its hairs. Incidentally, the term shampoo entered the English language through India where the Hindi word "champu" was used meaning to press or massage; it was used to denote cleaning through massage of the hair and skin.[2] Cleaning the hair has always been a tough task especially for women. An average western woman has 4-8 square meters of hair.[3] This will probably be more for the average Indian woman due to the culture of keeping long hair. Traditional soaps which were used earlier for both skin and scalp are not recommended anymore for hair cleaning as they don't have good lathering capability and leave behind "soap scum" when mixed with hard water which is difficult to rinse off. Modern shampoo as it is known today was first introduced in the 1930s with *Drene*, the first shampoo using synthetic surfactants instead of soap. Used initially for laundry and for cleaning carpets and cars, they later evolved as hair shampoo.[4What shampoos do Shampoos are used primarily to clean the scalp of dirt and other environmental pollutants, sebum, sweat, desquamated corneocytes (scales), and other greasy residues including previously applied hair care products such as oils, lotions and sprays



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WHAT IS SHAMPOO

Shampoos are cleaning formulations made up primarily of chemicals called surfactants that have the ability to surround oily materials on surfaces which allows them to be rinsed away by water. While there are numerous forms of shampoos the majority are slightly thickened solution formulas delivered from a plastic bottle. Often they are marketed towards different hair types or conditions. Shampoos are typically a solution form of cosmetic product designed to clean hair and leave it in a more manageable state. Solutions are the simplest type of cosmetic formulation, and if you're just getting started in making cosmetics, these are the good ones to start with because you mix the raw materials all together, they blend very nicely, you rarely have to worry about significant stability properties.Then we have products designed for color treated hair. These are essentially moisturizing shampoo formulas but specifically, targeted to people who color their hair.

And for people who want to enhance the color of their hair, you can get a color enhancing shampoo, which will theoretically deposit color on the hair. The way this is done is that there's extra dye in the shampoos. And so, when people are using it, the dye will play out on the hair and change the color of hair.

Rounding out our types of shampoos include baby shampoos, which are the ultra gentle shampoos. These are designed to be tear free to be able to be used on sensitive babies. They usually don't clean as well.

Natural shampoos

There are also shampoos that are purported to be natural. These are shampoos specifically designed to avoid harsh chemicals or things that people believe shouldn't be put on their skin. This includes compounds like sulfates, which are detergents and preservatives like parabens and formaldehyde donors. Of course, there's limited evidence that these compounds are harmful to people, however, consumers believe it so marketers have designed shampoos to address that need.

Medicated Shampoos

There are also specialty shampoos including anti-dandruff products, anti-lice and hair loss treatments, all of these are shampoos which use specific technologies to solve some highly specific problems.

Specialty shampoos

There are also a number of specialty type shampoos on the market. Powdered shampoos are all the rage which are essentially aerosol cans of pressurized powder. You spray the powder into your hair, it comes out as a dry powder and then you comb it out. The powder is designed to absorb the oils that are present in your hair and in this way you can clean your hair to some extent without ruining your style.

There's the no-rinse shampoo, which is a foamer and you pump the foam into your hand, you run it through your hair and then, you wipe the foam up. This is useful for people who don't have access to This is a hair conditioner that's designed to replace shampoos.

These are really fringe products, but people are using them as shampoos, so co-washing or no-poo is a no-foamin shampoo.

Shampoo raw materials

When you begin formulating a shampoo you first figure out what characteristics you want. This would include things like how thick it will be, the color, and fragrance. It also includes performance things like how well it cleans, what the foam looks and feels like and how irritating it will be.

Often consumer testing is employed to help with determining these characteristics.

The basic ingredients in a shampoo formulation are as follows. Water.

The primary ingredient in all shampoos, it makes up about 70 to 80% of the entire formula.

It helps dilute the detergents, makes the formula easier to spread and reduces irritation. It also keeps the formula inexpensive. Detergents.

The next most abundant ingredients in shampoo.

These surfactants are the primary cleansing ingredients and make up about 10% - 15% of the formula. They are derived from natural fatty acids or petroleum derivatives. Common primary detergents include Ammonium Lauryl Sulfate, Sodium Lauryl Sulfate and Sodium Laureth Sulfate. For natural shampoos companies have been using ingredients like Decyl Glucoside and Lauryl Glucoside.

Foam Boosters. Other types of surfactants are added to shampoos to improve the foaming characteristics of the formulation. Consumers like a nice creamy foam even though it doesn't actually affect how well the product works.

Foam boosting compounds, usually betaines or alkanolamides, help increase the amount of foam and the size of the bubbles. Like primary detergents, these ingredients are also derived from fatty acids and have both water soluble and oil soluble characteristics. Typical materials include Lauramide DEA or Cocamidopropyl Betaine. They make up about 5-10% of the entire formula.

To some extent the secondary detergents make shampoo formulations thicker. Simply adding salt can also increase shampoo thickness. However, other materials are also used to increase the viscosity such as Methylcellulose which is a cellulosic polymer or Carbomer which is a synthetic polymer.

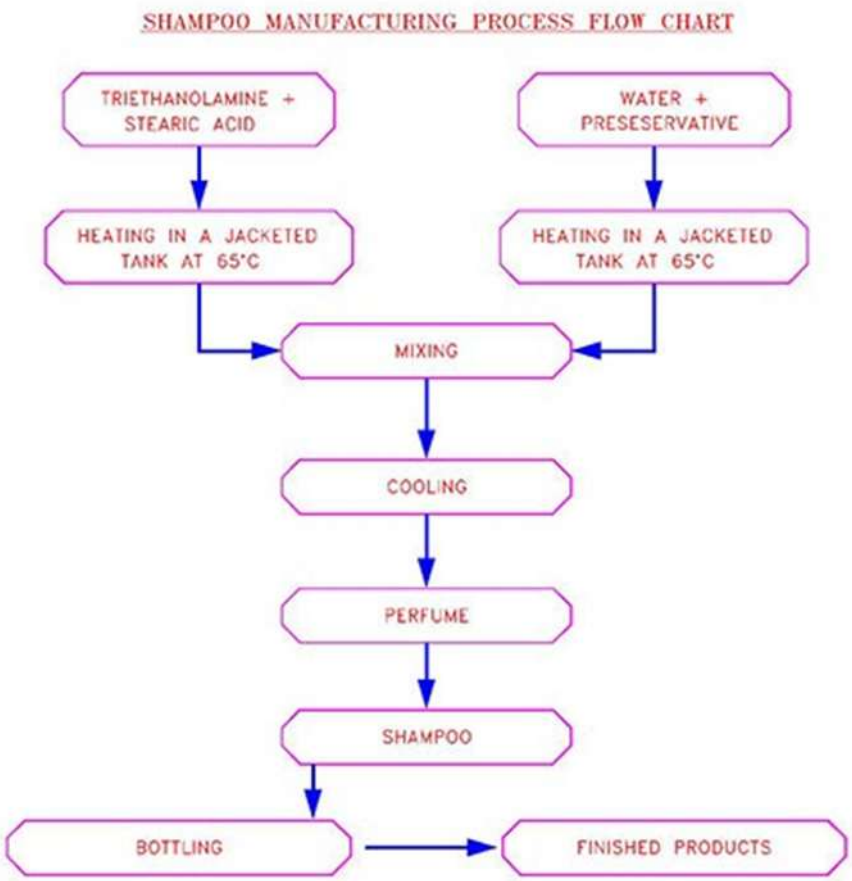
Conditioning agents. Some materials are added to shampoos to offset the harsh effect of surfactants.

Typical conditioning agents or moisturizing ingredients include polymers, silicones, and quaternary agents. These ingredients are left on the hair surface after rinsing and modify characteristics such as feel, softness, combability, and static charge. Shampoos that specifically feature conditioning as a benefit are called 2-in-1 shampoos because they clean and condition hair in the same step. Preservatives.

Any formula that contains water has the potential to be contaminated by bacteria and other microbes. Two of the most common preservatives used in shampoos are DMDM Hydantoin and Methylparaben. For natural shampoos ingredients like Sodium Benzoate, Benzyl Alcohol and Phenoxyethanol are used.

Other ingredients. A variety of other compounds are included in shampoos if desired. Dyes for changing color, fragrances for changing the odor, pH adjustment ingredients, chelating agents, opacifying ingredients, and more. Frequently, story ingredients are included so marketers will have something to talk about. This includes things like vitamins, proteins, and herbal extracts which are not normally expected to have any impact on the finalproduct performance. Medicated shampoos like anti-dandruff shampoos will include a drug active ingredient like zinc pyrithione.

Shampoo Manufacturing Process



All the ingredients are mixed together in large, stainless-steel tanks (3000 gallons or more) by workers known as compounders. The raw materials, which are typically provided in drums as large as 55 gallons or in 50 lb bags, are poured into the batch tank and thoroughly mixed. The order and temperatures are determined by the formulating chemist. Some ingredients like water or the primary detergents which make up the bulk of the product are pumped and metered directly into the batch tank. A computer interface is often used to control mixing speed and temperature. Depending on the size and type of shampoo, making a 3000 gallon batch can take anywhere from 1 to 4 hours or longer.

Quality Control check. After a batch is completed, it is sent to the quality control department for approval. Here they test it for things like proper pH, viscosity, color, odor and other specified characteristics. Once approved by the QC department, it is pumped out of the main batch tank into a holding tank where it can be stored until the filling lines are ready. From the holding tank, the shampoo gets pumped into a filler which is positioned on the filling line.

. They move along the conveyor belt to the filling carousel which holds the shampoo. The filling carousel is made up of a series of piston filling heads that are calibrated to deliver exactly the correct amount of shampoo into the bottles. As the bottles move through this section of the filling line, they are automatically filled with shampoo. From here the bottles move to the capping machine where caps are put on. This can also be done by workers depending on the speed of the filling line. Next, labels are applied, then the bottles are moved to a sorting machine that puts them into boxes. The whole process can take minutes or hours. It just depends on how advanced the filling process is. This video shows an example of a shampoo being filled.

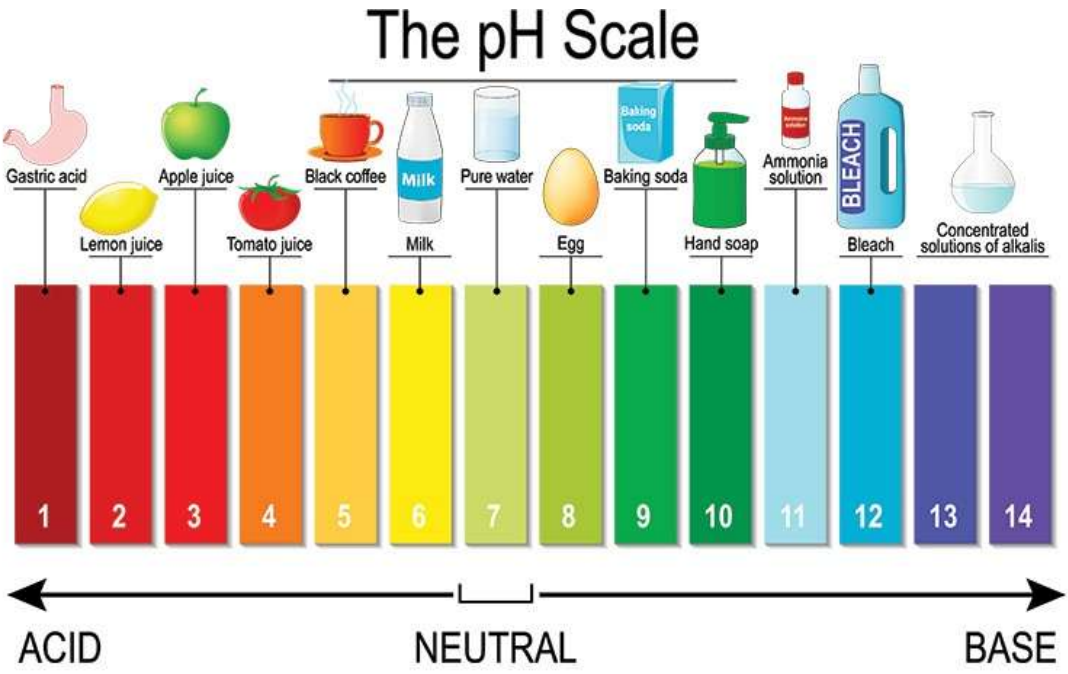
Types of shampoos

There are a limited number of shampoo types marketed, although they have lots of different names.

In general, these shampoos include normal, extra body, moisturizing, baby, two-in-one and specialty shampoos. Almost all brands have a normal shampoo line. Now, they might call it a daily shampoo line or a regular, but it’s the base formula that will appeal to the most number of consumers.

DEFINITION OF PH

The pH scale starts from the number 0 and ends at the number 14. These numbers allow the classification of substances based on their pH; the most acidic substances will be close to 0, while the most basic or alkaline substances will be close to 14. The lower the pH, the more H+ ions will be present and the stronger the acid. The most basic or alkaline substances will have a classification between 7 and 14.



pH Formula

pH = −log ([H+])

The formula for pH is shown above. pH is defined as the negative log base 10 of the hydronium concentration. The pH is a logarithmic measure of the concentration of hydrogen ions in a solution. Because pH is on a log scale that means that increasing the pH by 1 corresponds to multiplying the concentration of H+ ions by 10! So even though the difference between pH 6 and pH 7 might sound small, it's actually quite sizable. For the pH equation, the concentration of hydrogen ions is always a molar concentration, that is, moles of H+ per liter.

Why is pH important?

Some chemical reactions only take place under certain pH conditions. Sometimes this is because H+ or OH– acts as a reactant in the reaction. In other cases, acid or base can catalyze a reaction, meaning that they affect the rate of

MATERIALS AND METHODS;

Evaluation of Herbal Shampoos To evaluate the prepared formulations, quality control tests including visual assessment and physicochemical controls such as pH, density and viscosity were performed. Also, to assure the quality of products, specific tests for shampoo formulations including the determination of dry residue and moisture content, total surfactant activity, salt content, surface tension, thermal and mechanical stability and detergency tests were carried out. The results were compared with marketed formulations.

1.Phylesical appearance/visual inspection:

The formulations prepared were evaluated in terms of their clarity, foam
producing ability and fluidity .

2 . Determination of pH: The pH of 10%
shampoo solution in distilled water was determined at room temperature 25°C.

3. Determine percent of solids
contents: A clean dry evaporating dish was weighed and added 4 grams of shampoo to the evaporating dish. The dish and shampoo was weighed.

The exact weight of the shampoo was calculated only and the evaporating dish with shampoo was placed on the hot plate until the liquid portion was evaporated.
The weight of the shampoo only (solids) after drying was calculated.
4. Rheological evaluations: The viscosity
of the shampoos was determined by using Brookfield Viscometer (Model DV-l Plus, LV, USA) set at different spindle speeds from 0.3 to 10 rpm3 . The viscosity of the shampoos was measured by using spindle T95. The temperature and sample container's size was kept constants during the study.

5. Dirt dispersion: Two drops of shampoo were added in a large test tube containing 10 ml of distilled water. 1 drop of India ink was added; the test tube was stopped and shook ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy.

PREPARATION OF SHAMPOO
Simple procedure is involved in the preparation of shampoo. Initially only one method was available for the preparation of shampoo, but later the basic method was modified in order to obtain different types of shampoo like cream, gel, aerosol etc.

General Method For Preparation Of Shampoo:
Liquid shampoo is usually prepared by this method which involves the following steps:
Initially the detergent is converted into a solution form or a detergent solution ma ho directly obtained from the manufacturer. Take about half of the detergent solution into a separate container. To it, add the total amount of secondary surfactant i.e., alkanol amide. Dissolve the alkanol amide along with stirring. Sometimes, gentle heat is also applied. To the remaining half of the detergent solution add a suitable amount of perfuming agent and dissolve it. The perfume solution is then added to the alkanol amide solution. Colour and preservatives are dissolved separately in sufficient volume of water and then added to the main solution. The whole solution is mixed well by gentle stirring. Excessive stirring may lead to bubble formation. Final volume of the preparation is usually adjusted by the addition of clear sterile waste. This gives clear liquid shampoo.
However, Whenthe preparation contains lauryl alcohol ether sulphate. It is required o adjust the viscosity of the shampoo. Viscosity adjustment is done by using an electrolyte solution. Usually, a solution of sodium chloride is added subsequently with constant stirring. Care must be taken to it even with the excess addition of sodium chloride.

LIST OF DIFFERENT TYPES OF SHAMPOOS

- Chick
- Vartika
- Meera
- Sun silk
- Nyle
- Loreal
- Dove
- Dandruff
- Pantene pro-v
- Head and shoulder
- Clinic plus

EXPERIMENTAL PROOF FOR THE PH

VALUES OF DIFFERENT TYPES OF SHAMPOOS

AIM: To identify the PH values of different types of shampoos.

MATERIAL REQUIRED

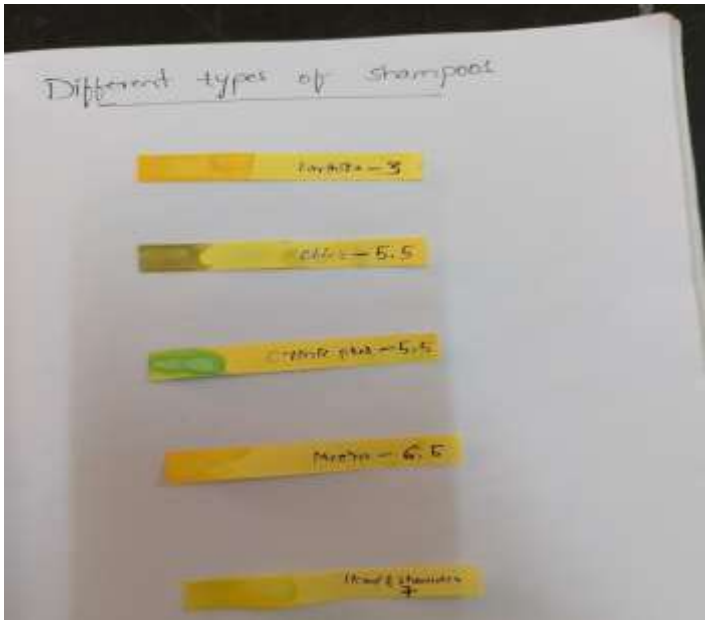
- pH papers
- Different types of shampoos.

PROCEDURE:

- We gather different types of shampoos from student on our campus
- After the collection of shampoos taken all the materials that are required for experimental procedure.
- PH papers and different types of shampoos.
- observed variation occurs in the litmus paper.

TABLE:

S .no	**Product name**	**PH VALVE**
1	Chick shampoo	5.5
2	Meera shampoo	6.5
3	head & shoulder	7
4	Clinic plus	5.5
5	Sun silk	7
6	Dry shampoo	6.5
7	loreal	4.6



OBSERVATION

Observed a variation of PH values of different shampoos . From above the table I finally observed that the highest is head & shoulder shampoo PH is 7 & lowest is karthika shampoo PH value is 3.

ADVANTAGES AND DISADVANTAGES SHAMPOOS ADVANTAGES

- Shampoos keeps hair silky and smooth
- Keeps dirt, dust, oil, and pollutant away
- Is less toxic
- It is slightly acidic
- Causes less damages to hair

- Shampoos is easy to rinse
- There is minimum skin and eye irritation
- Repair damaged

DISADVANTAGES

- Sodium Lauretha sulphate is commonly used in shampoos which may harm eyes and skin .
- It can cause headache and vertigo and soreness in the eyes, nose, throat and lungs.
- The use of SLES decreases new hair growth and extends hair loss period.
- The existence of SLES in hair might worsen follicles of hair and increase scalp.

Side Effects Of Shampoo On Hair

The type or brand of shampoo you use also plays a key role in ensuring whether your hair is damaged or protected. Shampoos containing harmful chemicals like phthalates under the disguised title of fragrance, preservatives like parabens, and foaming and lather-generating agents like sulfates can be harmful.
Parabens, more importantly, have been found to penetrate the skin and interfere with hormone function. Using organic and natural shampoo products can cut down all such harmful effects.

Results:

All shampoo pH values ranged from 3.5 to 9.0. 38.21% of all 123 shampoos presented a pH ≤ 5.5 (IC: 29.9 -- 47%) and 61.78% presented a pH > 5.5. 26 anti-dandruff shampoos were analyzed. About 19.23% presented pH ≤ 5.5.(IC: 7.4–37.6%). 80.77% of all anti-dandruff shampoos presented a pH > 5.5. The dermatological shampoo group (n = 19) presented 4210% with pH ≤ 5.5 (IC: 21.8–64.6%), and 57.90% with pH > 5.5. Among the commercial (popular) products (n = 96), 34.37% presented pH ≤ 5.5 (IC: 25.4 -- 44.3%) and 65.62% presented pH > 5.5. 15 professional products (used in hair salons) were analyzed, of which 75% had a pH ≤ 5.5 (IC: 18–65, 4%), and 25% had a pH > 5.5. 100% of the children's shampoos presented a pH > 5.5.

Conclusions:

Alkaline pH may increase the negative electrical charge of the hair fiber surface and, therefore, increase friction between the fibers. This may lead to cuticle damage and fiber breakage. It is a reality and not a myth that lower pH of shampoos may cause less frizzing for generating less negative static electricity on the fiber surface. Interestingly, only 38% of the popular brand shampoos against 75% of the salon's shampoos presented a pH ≤ 5.0. Pediatric shampoos had a pH of 7.0 because of the "no-tear" concept. There is no standardized value for the final pH. The authors believe that it is important to reveal the pH value on the shampoo label, but studies are needed to establish the best pH range for both the scalp and the hair fiber's health.

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