

pH Evaluation of some Skin Cleansers in Sabratha, Libya

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Abstract:

The present investigation was carried out to determine the pH values of some Skin Cleansers in Sabratha, Libya. Twenty-four different Samples of branded shower gel, liquid soap and shampoos, were random collected. According to the standard method ASTM D1172, pH values were measured using WTW-Multiline P4 pH meter. The experimental obtained results were analyzed and presented graphically. The majority pH values of shampoo were acid balanced and the rest of shampoo samples tend to be neutral. 50% of the pH values of Shower gel and liquid soap were acidic and the other 50% of the pH values tend to be neutral. The majority pH values of shampoo were acid balanced and the rest of shampoo samples tend to be neutral. 50% of the pH values of Shower gel and liquid soap were acidic and the other 50% of the pH values tend to be neutral.

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Introduction

Skin Cleansers are defined as "articles with mild action on the human body, which are intended to be applied to the human body through rubbing, sprinkling or other methods, aiming to clean, beautify and increase the attractiveness, alter the appearance or to keep the skin or hair in good condition. Shampoo and body shower gel are two major classes of personal care cleansing products. Shampoos are specifically formulated to clean and take care of hair, whereas body wash is a liquid soap that is appropriate for cleansing the body. Most commercial shampoos and body washes are made as creams or gels. They are emulsions or gels of water and detergent base with added functional ingredients [1-2]. The surface of the skin is slightly acidic, giving rise to the concept of the acid mantle [3]. The acidic layer helps the skin retain moisture and keeps germs out. To help maintain the skin's fatty protective layer, must be used a cleanser with a pH level similar to that of the skin itself. Typical pH of healthy non-diseased stratum corneum surface is around 4.0–6.0 [4-11] that among other things depends on gender, age, ethnicity, body site and physiological condition. Studies have shown that potential of hydrogen (pH) of skin increases in proportion to the pH of cleanser used [12-14]. Increase in pH causes an increase in dehydrative effect, irritability and propionibacterial count. Therefore, the use of skin cleansing agents with a pH of about 5.5 may be of relevance in the prevention and treatment of those skin diseases [15-18]. The pH of the scalp, however, is around 5.5 like the rest of the skin, which is more alkaline than the hair shaft pH. Although there is not a standard definition for the concept of low-pH, and also the pH value is not mentioned in the labels of many products. Therefore, evaluation of skin cleaners is very important to know their performance, quality and efficacy and to check whether the products have any sensitive toxic effects on the human body. The aim of this study is to analyze

the pH of some commercially available liquid soaps, shower gel and shampoos of international brands in Sabratha to verify if the pH levels follow a constant pattern.

Material and methods

Twenty-four different Samples of branded bath shower, liquid soap and shampoos, were random collected from shops in the City of Sabratha, Libya. They included 10 Shower gel samples, 11 shampoo samples and 3 liquid soap samples, Table 1.

Table 1 Different Samples of branded bath shower, shampoos and liquid soap.

Shower gel		Shampoo		Liquid soap	
B1	Milmil, Muschio	S1	Lifebuoy	L1	Genera Idra Tante
B2	Agrado Traditional	S2	Chicco baby	L2	Juhaina, Total ⁺
B3	Genera Bagno	S3	Johnsons camomila	L3	Touri Elegance
B4	Anian, Avena	S4	Sunsilk, orange		
B5	Neutro-Sarf	S5	Sunsilk, yellow		
B6	Milmil, Mora	S6	Clear, Cool Sport		
B7	Agrado Gold	S7	Forea for men		
B8	Milmil	S8	Forea, green		
B9	Oriense Gel	S9	Head & shoulders		
B10	White Yasmine	S10	Syoss Coloriste		
		S11	Johnsons baby		

- **Procedure used**

Preparation of Solution —Weigh 0.30 ± 0.01 g of the sample and transfer to a 250-mL Erlenmeyer flask. Add 100 mL of boiling distilled water or equivalent that has been boiled vigorously for 15 min just prior to use. Loosely stopper the flask with a clean, neutral, one-hole stopper fitted with a suitable thermometer readable to the nearest 0.1°C in the 25 to 50°C range and so arranged that the thermometer bulb will be completely immersed in the liquid. Agitate the flask and contents to apparently complete solution of the sample; then cool rapidly under tap water to $43 \pm 0.5^\circ\text{C}$. Promptly pour enough of the solution into the pH beaker to almost fill it.

- **Determination of pH:**

Readings of pH were taken using WTW-MultiLine P4 pH meter after calibrating with the standard solution. According to the standard method ASTM D1172 of the American Society for Testing and Materials, samples were coded before the analysis of the pH. The procedure was divided so that one person was involved in measuring the sample, another in coding, then another in mixing and the last person in the measurement of pH, so that the person involved in measurement of pH does not know the identity of the sample being tested. Then the pH of each sample was measured. The following Table summarized the measured pH values of Bath shower, Shampoo and Liquid soap.

Table 2 Measured pH values.

Shower gel		Shampoo		Liquid soap	
Sample	pH	Sample	pH	Sample	pH
B1	6.26	S1	4.78	L1	6.26
B2	6.61	S2	5.46	L2	6.55
B3	5.92	S3	4.91	L3	6.6
B4	6.18	S4	6.61		
B5	6.75	S5	7.22		
B6	6.04	S6	5.75		
B7	6.89	S7	4.71		
B8	5.93	S8	4.74		
B9	6.69	S9	7.75		
B10	5.98	S10	4.66		
		S11	4.88		

Results and discussion

Shampoo and body shower gel are two major classes of personal care cleansing products. Shampoos are specifically formulated to clean and take care of hair, whereas body wash is a liquid soap that is appropriate for cleansing the body. Most commercial shampoos and body washes are made as creams or gels. They are emulsions or gels of water and detergent base with added functional ingredients. The degree of acidity is one of the requirement quality of liquid bath soap and shampoos. Shampoos have a pH of between 4 and 6. Body wash contains milder surfactant bases than shampoos. In addition to being pH-friendly to the skin (5– 6.5).

The experimental determined pH values of Shower gel (SG1-SG10), Shampoo (S1-S11) and Liquid soap (L1-L3) are summarized in Table 2 and presented graphically in the following Figures.

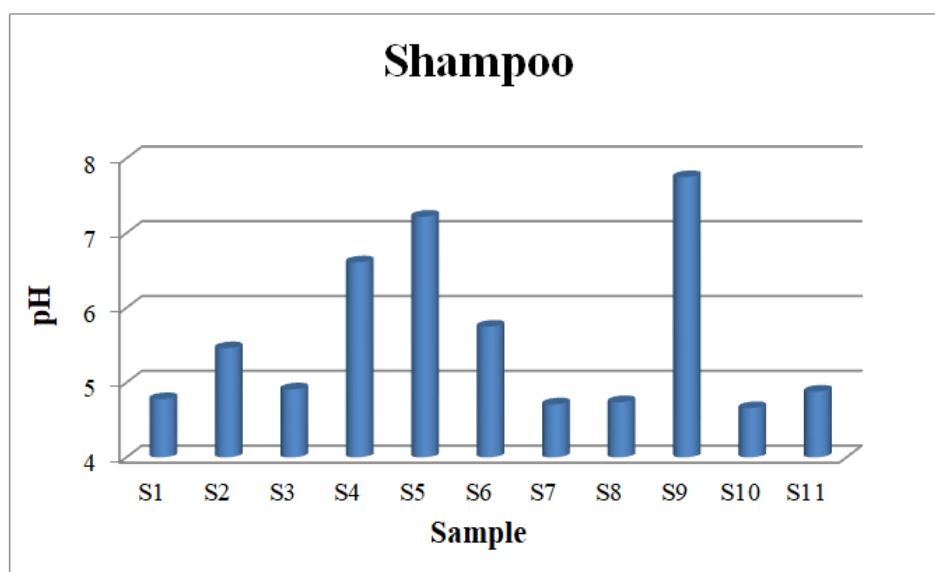


Figure 1 Measured pH Samples of branded shampoos.

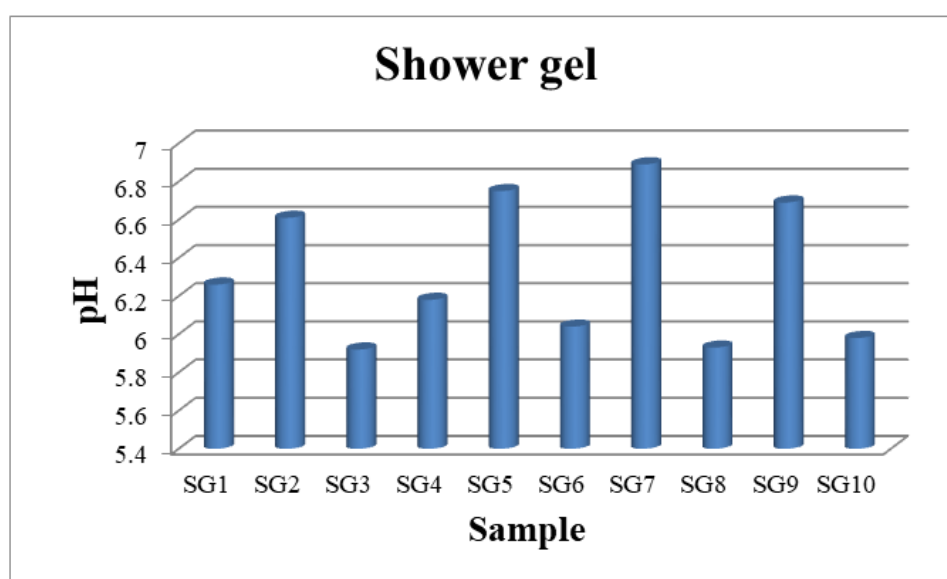


Figure 2 Measured pH Samples of branded bath shower.

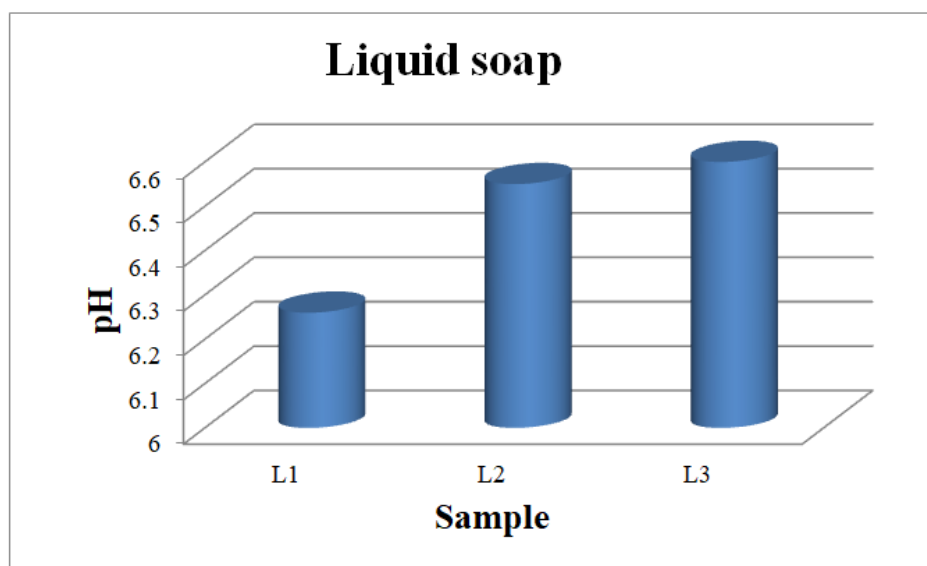


Figure 3 Measured pH Samples of branded liquid soap.

Balanced shampoos are important for improving and enhancing the qualities of hair, minimizing irritation to the eyes and stabilizing the ecological balance of the scalp. Mild acidity prevents swelling and promotes tightening of the scales, there by inducing shine. Thus the current trend is to promote shampoos of lower pH is one of the ways to minimize damage to the hair. The majority pH values of shampoo (Figure 1) were acid balanced and were ranged 4.66 to 5.75, which is near to the skin pH. The rest of shampoo samples tend to be neutral.

Shower gel and liquid soap are usually less irritating, having the same pH as that of skin and containing emollients and humectants. An emollient is a material that soothes and softens the skin; most emollients used in personal care are lipids or silicones. Similarly, a humectant is a substance that helps retain moisture in skin. 50% of the pH values of Shower gel and liquid soap were acidic (5.92- 6.26), and the other 50% of the pH values tend to be neutral.

Conclusion

The purpose of this study was to evaluate the pH of various commonly available liquid soaps, bath shower and shampoos of international brands in Sabratha to verify if the pH levels follow a constant pattern. Twenty-four different Samples of branded bath shower, liquid soap and shampoos, were random collected from shops in the City of Sabratha, Libya. They included 10 Shower gel samples, 11 shampoo samples and 3 liquid soap samples. The majority pH values of shampoo were acid balanced and the rest of shampoo samples tend to be neutral. 50% of the pH values of Shower gel and liquid soap were acidic and the other 50% of the pH values tend to be neutral.

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