

Physico-chemical parameters apply for analysis of quality improvement of cosmetic product lipsticks

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ABSTRACT

This research work has been used for the study of physico-chemical properties focused on cosmetic (lipstick) products, applying selected parameters such as pH, viscosity, surface tension and absorbance. In which the pH of water soluble samples was found range of pH 5.7-7.5. The viscosity and surface tension analyzed by the formula used were determined in water-soluble cosmetic samples. In which the absorbance efficiency of cosmetic samples were quantities analyzed after being dissolved in water in different wavelength range from 280 nm to 380 nm.

Keywords: Cosmetic, pH, Viscosity, Surface tension, and Absorbance.

I. INTRODUCTION

Cosmetics are incredible in demand from historical times to the present day. Lipsticks are most commonly used to enhance the beauty of lips and to add glamor touch to makeup. It is difficult to apply lipstick on dried, chapped, cracked, wound lips with lesions and sores. In such cases, medicinal lipsticks can be used for the purpose of beautifying lips.^[1] Lipstick is a cosmetic product that beautifies lips, changing their natural color to beautiful and attractive. The basic lipstick ingredients are made up of wax, oil, alcohol, fragrance and dyes, used for Gives lipstick different extra properties, such as moisturizing, luminous property.^[2] The manufacturing process consists of steps such as melting, mixing, shaping and packaging.^[3] The choice of these ingredients is carefully considered to provide the desired colour, glossiness, and indelibility.^[4] Waxes are perhaps the most important for the structure and shape of the lipstick. Beeswax is composed of around three hundred different chemical compounds includes organic acids and hydrocarbons.^[5] several type of waxes

used is Candelilla and Carnauba wax, obtained from the Mexican Candelilla shrub and Brazilian Carnauba Palm, and others Jojoba, Mineral, Paraffin, and Ceresin waxes which at approximately 85°C has the highest known melting point.^[6-8] The most commonly used is castor oil, olive oil and mineral which can utilized lipstick emollient, skin-softening properties; glossiness to its appearance. The pigments and dyes are certainly the most important for the colour of the lipstick.^[9] Several gradients are added in small quantities to provide moisturizing qualities and pleasant fragrance available in the lipstick.^[10] The wax mixtures using for the gloss and hardness of lipsticks rarely depends on the amount of wax mixtures. The oil mixture needs to be blended properly to provide a suitable film that spreads easily on the lips. The dyes mixture using for essentially a solution of the staining dye to enable the color of the lipstick is most important from commercial and appealing view. Some natural or synthetic gradients are added to the fragrance, which is also fragrant enhance the smell of flavored with the beauty of lips. The preservatives and antioxidants keep lipstick fresh, safe and protects it from damage. The characteristic of lipsticks preservatives are used to prevent microbial growth and play a role as antimicrobial agents. Perfume is used to mask the smell. Surfactants are used to promote wetting properties.

II. MATERIALS AND METHODS

Sample Collection: The cosmetic lipstick samples were purchased from local beauty shops in Betul district, so some variety name were available on wrappers such as Aleen red colour (ARC), Larsen magic green (LMG), Local light pink (LLP), Magnet light pink (MLP), Roopam baby pink (RBP), Roopam dark purple (RDP), Roopam

orange colour (ROC), Roopam skin colour (RSC), Ten sports moisturising (TSM), and Verben magic green (VMG), the samples were identify colours observations.

Sample Preparation: The cosmetic lipstick samples were cut into small pieces at 1.0 gm

samples placed in 10 ml of distilled water separately for each samples were pre heated at 60°C for 30 minutes, the samples were dissolved. The samples were cooled at RT and centrifuged at 250 rpm for 5.0 minutes and supernatant were collected in tubes and stored for further analysis.



The photo-plate shows some gradients of lipstick dissolved in water.

Cosmetic lipstick soluble samples were determined the pH value to measured the potential of hydrogen ions in suspensions contained in cosmetics samples.

Physical properties such as viscous properties of soluble contain at cosmetic lipstick determined by used viscometer in certain times and stalagmometer used for determination of surface tension measured the pendent drop numbers (PDN) counted at constant temperature at RT. Finally values of liquid samples were estimated by used following formulas known as For Viscosity $\eta = \eta_0 (t/t_0 \times \rho/\rho_0)$ and Surface Tension $\gamma = \gamma_0 (n_0/n \times \rho/\rho_0)^{[11]}$.

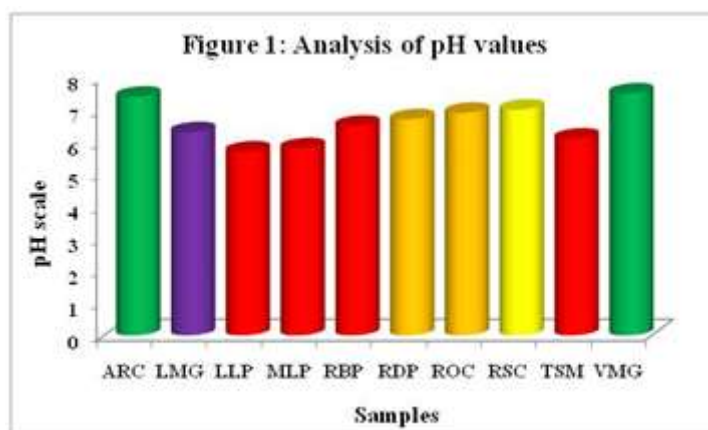
The soluble gradients the presence in liquid samples of cosmetic lipstick determined concentration of solubility by used

spectrophotometer at various wavelengths knows as 280-380nm find the steps of 20nm.

In determining the anti-microbial activity, nutrient agar media formed the cavity in the plate after forming the spherical form of the plate as well. Fill the previously prepared cosmetic samples in each well with 1-2 drops. Leave the plate in the open environment for some time. After the growth of microorganisms inside the plate for 24-48 hours at 37°C, the growth had shown in the zone.

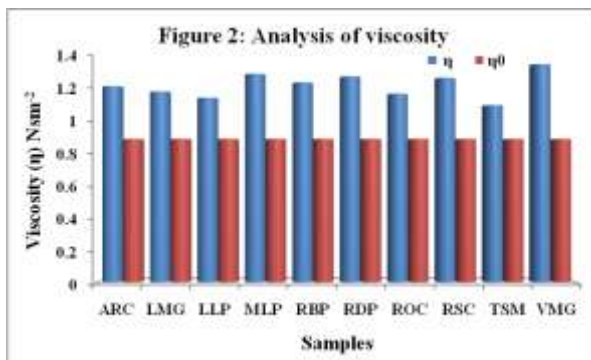
III. RESULTS AND DISCUSSION

pH values: The obtained results showed that the pH values of the cosmetics were close to neutral pH, from the pure water pH 7.0 baseline. Two samples were found to the weak alkali pH at ARC pH 7.4 and VMG pH 7.5, and two samples ROC pH at 6.9 and RDP pH at 6.7 found approx near to neutral, while sample RSC pH at 7.0 found at neutral. The others samples were found weak acidic pH range from pH at 5.7 to 6.5 of samples LLP, MLP, TSM, LMG, and RBP. The details are shown in figure 1.



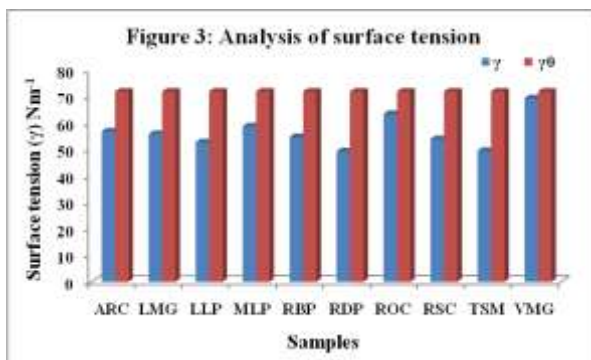
Viscosity: The analysed viscous properties of the liqued sample thethickness of dispersive cosmetics compared with pure distilled water. In which the sample VMG was given the highest viscous at 1.3593 Nsm⁻² and the sample TSM was found the lowest viscous at 1.1043 Nsm⁻². The others samples ARC, LMG, LLP, MLP, RBP, RDP, ROC, and

RSC were found viscous between range at 1.1512-1.2998 Nsm⁻². The analysed samples were arranged on the based performance in inceasing order such as TSM< LLP< ROC< LMG< ARC< RBP< RSC< RDP< MLP< VMG^[12]. The details are shown in figure 2.



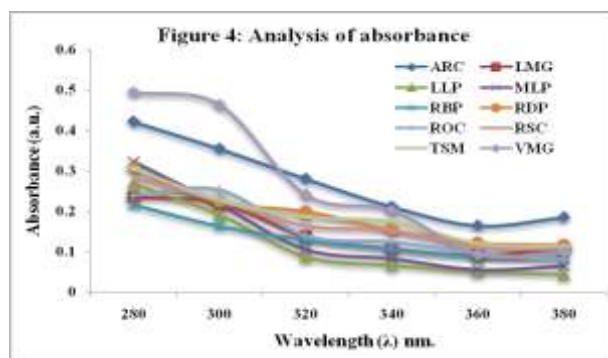
Surface Tension: The analysed surface tension properties the contraction tendency of a liquid's surface that allows it to resist external force of the sample of dispersive cosmetics compared with pure distilled water at constant RT. In which the sample VMG was given the highest surface tension at 69.49 Nm⁻¹ and the sample RDP was given the lowest surface tension at 49.39 Nm⁻¹. The others

samples ARC, LMG, LLP, MLP, RBP, ROC, RSC and TSM were found surface tension between range at 49.58- 63.57 Nm⁻¹. The analysed samples were arranged on the based performance in inceasing order such as RDP< TSM< LLP< RSC< RBP< LMG< ARC< MLP< ROC< VMG^[12]. The details are shown in Figure 3.



Absorbances: Obtained results from spectrum were absorption values found at differet wavelength between from 280 nm to 380 nm. In which the samples were given highest peaks of the sample VMG at 280 nm and 300 nm and other the

sample ARC at 320-380 nm. The samples were found lowest peaks of the sample RBP at 280 nm and 300 nm and other the sample LLP at 320-380 nm. The details are shown in figure 4.



IV. CONCLUSIONS

Cosmetic products are the basic necessity for makeup and good looks in the modern era. In this case, cosmetic products can be beneficial or harmful to the skin and health. In cosmetic products such as lipstick, it tends to dissipate in water after some physical approach such as heat. The body temperature may cause some of the lipstick substance to dissolve. The results obtained from the physico-chemical properties test showed that the local cosmetic product lipstick is more dispersible in water. This can have harmful effects on health as some cosmetic gradients such as waxes, oils and dyes may dissolve when food or other beverages are consumed and cause problems with digestion of food in the stomach.

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