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Dt.31/03/2016

To,

The Secretary,

University Grant Commission (UGC)

Pune- 411007

Subject: (A) Annual Report of Minor Research Project F.No.**47-670/13 (WRO)**

(B) Request for releasing remaining amount of Rs.45,000/-

Dear Sir,

As my minor research project entitled "Comparative Physico Chemical analysis of some marketed hair oils " 1st year is completed. Herewith I am sending Annual report & Audited statement of expenditure of the 1st year.

Please do needful in the matter and releasing amount of Rs.42, 500/-

With best regards,

Thanking you

Yours Faithfully

S.A.Makwana

Principal Investigator

Annexure-1

UGC Minor research project

(Final Report)

[F. No: 47-670/13 (WRO Dt.09/01/2015)]

Work done (Period): 09/01/2015 to 30/03/2016

**Title of Project: COMPARATIVE PHYSICOCHEMICAL ANALYSIS OF SOME
MARKETED HAIR OILS**

Objectives of project:

1. Selection of 10 samples.
2. Collection of the oil samples of bought from local market of Ahmedabad.
3. Analysis of oil samples analyzed in our Chemistry Laboratory.

Work done so far:

We have selected 10 hair oil samples widely used by all age of peoples. The main object of the sampling is to obtain samples for the purpose of analysis of hair oil which is widely used.

For such purpose the samples are bought from local market of Ahmedabad & carried out with all safety to our chemistry laboratory for as per APHA (standard method for examination of Soil APHA, AWWA, WPCE, New York).

We want to analyze this hair oil & also want to note down comparative analysis.

From this analysis we have published our research work in “Pelagia Research Library” in the issue of February month i.e. **Advances in Applied Science Research, 2015, 6(12):96-98**

Copy of paper is also attached.

: About Project:

Hair is one of the important parts of the body considered by all genders & all age groups. For the care of hair various type of hair oils are used specially by young generation. Various brands of hair oils are available in the market for scalp ,dandruff prevention & growth. These hair oils contain plant extractives and some agents that give cooling effect. We have selected ten hair oils for comparative evaluation for their physicochemical properties, i.e. color, odor, density, viscosity refractive index, pH, saponification value, acid value and peroxide value. For comparative analysis we have taken physicochemical parameters and some standards prescribed by **Bureau of Indian Standards** as a base.

: Analysis:

We have bought 10 hair oils samples from local market of Ahmedabad & analyze in our Chemistry Laboratory. We have measured Viscosity, Density, Refractive index, Acid value, Peroxide value, Saponification value of each value. We have also made comparative analysis.

: Methodology :

1. Preparation of solution for analysis
2. Weigh the solution accurately & diluted the solution to 100ml for analysis
3. Mixture heated for 8-10 hours between 65 to 75^oc.
4. Allow the solution to room temperature and filtered by using proper filtration method.

: METOD OF ANALYSIS:

1. **Acid value** : I have prepared 0.1 M solution of KOH pellets by weighing 0.56gm. and made 100 ml with distilled water. This 0.1 M KOH solution was taken in burette. Sample solution 10 ml taken by pippete and dissolved in 25ml of ether mixture and shaken. This solution is titrated with KOH solution by using phenolphthalein indicator. Acid value was calculated by using following formula.

Acid value = $5.61n/w$ where n = no. of ml 0.1 M KOH & w = weight of oil

- 2. Saponification value :** 2gm. of oil was accurately weighed and transferred into a 250ml iodine flask. 25ml of 0.5ml alcoholic potassium hydroxide was added and boiled under reflux on a water bath for 30 mins. Phenolphthalein was added as indicator and titrated against 0.5m HCl (a). Similarly blank was performed (b) without the sample. The saponification value of the prepared oil was calculated by using formula

Saponification value = $28.05 (b-a)/w$ Where, W = weight in gram of the oil

3. pH

pH of the poly herbal hair was detected using pH meter. Take the formulated oil in beaker individually now deep the ph meter in beaker and weight for 1minute till the reading come, as the pH meter show the reading note it down individually. Before using pH meter deep it into the water

4. Viscosity

Viscosity is determined by means of Brook field's viscometer. In which firstly take sample of prepared oil and then use spindle no 63 for viscosity determination now start brook field viscometer and weight for 1 min and reading is noted down in centipose

5. Sensitivity test :

Hair oil was applied on 1cm skin on hand directly exposed to sunlight for 5-6 minutes.

6. Specific gravity

Take two specific gravity bottle, rinsed it with distilled water, dry it in oven for 15min, cool, closed it with cap and weight it (a). Now fill the same specific gravity bottle with the sample and closed it with cap and again weight it (b). Determine the weight of sample per milliliter by subtracting the weight (b-a)

: RESULT :

Keo Karpin	Light green	Aromatic	0.835	19.221cp	1.194	248	0.753	2.94	6.6
Sesa	Pale Yellow	Aromatic	0.987	24.992cp	1.389	229	0.697	2.74	6.7
Bajaj Almond	Pale Yellow	Aromatic	0.977	21.963cp	1.187	288	0.859	2.93	6.9
P.Jasmine	Color less	Aromatic	0.838	27.124cp	1.257	259	0.78	3.28	7.2
Dabur Amla	Green	Aromatic	0.912	32.639cp	1.489	219	0.843	2.23	7.4
Shanti Amla	Green	Aromatic	0.936	31.890cp	1.723	193	0.932	1.93	6.7
Parachute coconut	Colorless	Aromatic	1.017	37.239cp	1.328	247	0.742	2.34	7.1
Kesh King	Light Green	Aromatic	1.001	27.379cp	1.234	174	0.689	2.11	6.5
Nihar	Green	Aromatic	0.948	25.496	1.561	144	0.908	2.94	6.8
Navratna	Orange Red	Aromatic	1.009	34.946cp	1.355	239	0.69	2.83	7.1

: CONCLUSION :

We have analyzed 10 very well known , regularly used by all age group people hair oil & finally we can conclude that all 10 hair oil are satisfying the criteria suggested by BIS for quality. All hair oil differing value in each criteria. Color of each oil differs and they have opted their color according to their choice and interest. Parachute hair oil we have found most viscous while Keokarpin hair oil is very less viscous and mostly liked by youngster as it is less sticky. Refractive index range we have found between 1.18 to 1.56 . Saponification value lies between 144 to 288. Acid value was between 0.68 to 0.90. pH value was between 6.5 to 7.4 so its about neutral value So we have found that all the hair oil are satisfying physicochemical parameters and some standards prescribed by Bureau of Indian Standards so the conclusion is that it is safe to use such type of hair oils.

: ACKNOWLEDGEMENT :

The authors are thankful to UGC for providing financial assistance for this research work, The Principal & H.O.D. of Chemistry Department of KKSJ Maninagar Science College for providing laboratory facilities for such analysis.

UGC Minor Research Project **(Final Report)**

[F.No: 47-670/13 (WRO 09/01/2015)]

Work done (Period): 09/01/2015 to 30/03/2016

Title of Project: Comparative physicochemical analysis of some marketed hair oils

