Physicochemical Investigation of Some Herbal Hair Oil

Azra Kamal*
Forensic Science Laboratory, C.I.D (Police), Patna-800023, Bihar, India.
*Corresponding author’s E-mail: azrakamal.biochem@gmail.com

Accepted on: 10-12-2014; Finalized on: 31-01-2015.

ABSTRACT
Hair is one of the vital parts of the body derived from ectoderm of skin, is a filamentous biomatirial that grows from follicles found in the dermis and also a protective appendages on the body. All natural nourishing preparations for dry scalp and hair combines herbal oil extracts traditionally used to treat hair conditions. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Present study was conducted to standardize the selected herbal hair oils for their physicochemical properties, i.e. color, odor, pH, specific gravity, acid value, peroxide value and saponification value. The findings of the study showed that the test oil were complies the requirements for physicochemical parameters prescribed by BIS.

Keywords: Herbal hair oil, Physicochemical parameters, Herbal formulations.

INTRODUCTION
Hair is a uniquely mammalian trait with important functions. Throughout history and in most of civilizations, scalp hair has been associated with positive signals such as beauty and power. Baldness or hair loss on the other hand has a negative attribute. Hair oils are the hair care preparations used for the prevention and treatment of baldness or other ailments, aggression of hair. They also promote the luxurious growth of hairs. Hair oil containing herbal drugs are used as hair tonic. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Present study was conducted to standardize the selected herbal hair oils on physicochemical parameters and some standards prescribed by Bureau of Indian Standards.

MATERIALS AND METHODS
Himani Navratna oil and Dabur Amla oil were purchased from local market from Patna district of Bihar, India.

Physicochemical evaluation was done using conventional method.

Physicochemical analyses

** Determination of color and odor**
Color and odor of the oil samples were typical of their constituents.

** Determination of specific gravity**
The specific gravity of the oils were calculated from the following relationship.

\[
\text{Specific Gravity at } 30^\circ\text{C} = \frac{A-B}{C-B}
\]

Where, \(A = \) weight of specific gravity bottle with oil at \(30^\circ\text{C} \) (g); \(B = \) weight of specific gravity bottle at \(30^\circ\text{C} \) (g); \(C = \) weight of specific gravity bottle with water at \(30^\circ\text{C} \) (g).

** pH Determination**
The digital pH meter was used for pH determination.

** Determination of acid value**
Acid value = \(5.61V N / W\)

Where, \(V = \) Volume of standard sodium hydroxide used (ml); \(N = \) Normality of the sodium hydroxide solution; \(W = \) Weight of the sample (g).

** Determination of peroxide value**

\[
\text{Peroxide value} = 10 \left(\frac{a-b}{w}\right)
\]

Where, \(a = \) ml of NaOH required to neutralize the substance, \(b = \) ml of NaOH required for blank, \(w = \) weight of sample in (g).

** Determination of saponification value**
Saponification value = \(28.05 \text{ (B-S)} W\)

Where, \(S = \) ml of KOH required to neutralize the substance; \(B= \) ml of KOH required for blank; and; \(W = \) Weight of the sample taken for the test (g).

RESULTS
In present study physicochemical evaluation was carried out on Himani Navratna oil and Dabur Amla oil. The various standard tests were performed and the test shows following results as in table 1.

DISCUSSION
Color and odor of the oil samples were typical of their constituents. The pH of both hair oils were found to be near about neutral, 6.3 of Himani Navratna Oil and 7.0 of Dabur Amla Oil which was in accordance with human

---

© Copyright protected. Unauthorized republication, reproduction, distribution, dissemination and copying of this document in whole or in part is strictly prohibited.
skin. Acid value is an indication of rancid state. Lower the acid value higher the quality of oil. Acid value of both the oils were found to be ranging from 0.8 (Himani Navratna Oil) to 0.9 (Dabur Amla Oil) whereas peroxide value were found to be ranging from 3.0 meq/1000 gm (Himani Navratna Oil) to 2.9 meq/1000gm (Dabur Amla Oil). If Peroxide value is high, the skin irritation coefficient will consequently increase and therefore many fragrances and essential oils have a peroxides index lower than a certain value. Saponification values are highly significant in the making of soap. It is important that the saponification value is just right too high and the soap might contain too much alkali even though there is sufficient soapsiness that it would react with skin whilst a saponification value too small the fatty acid salts will not be sufficient enough to remove or saponify the fat or oil and less soapsiness. Saponification value of Himani Navratna Oil was found as 231 and 183 of Dabur Amla Oil.

**Table 1: Physicochemical analyses of some herbal oil**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameters</th>
<th>Himani Navratna Oil</th>
<th>Dabur Amla Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Color</td>
<td>Dark red</td>
<td>Green</td>
</tr>
<tr>
<td>2.</td>
<td>Odour</td>
<td>Aromatic</td>
<td>Aromatic</td>
</tr>
<tr>
<td>3.</td>
<td>pH</td>
<td>6.3</td>
<td>7.0</td>
</tr>
<tr>
<td>4.</td>
<td>Specific Gravity</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>5.</td>
<td>Acid value</td>
<td>0.8</td>
<td>0.9</td>
</tr>
<tr>
<td>6.</td>
<td>Peroxide value</td>
<td>3.0</td>
<td>2.9</td>
</tr>
<tr>
<td>7.</td>
<td>Saponification value</td>
<td>231</td>
<td>183</td>
</tr>
</tbody>
</table>

**CONCLUSION**

This evaluation studies on different brand of herbal oils suggest that, selected parameters may be used in the standardization of herbal hair oil. The findings of the study show that the test oil were complies the requirements for physicochemical parameters prescribed by BIS.

**Acknowledgement:** I am very thankful to Dr. S.R Padmadeo, HOD Dept. Of Biochemistry, Patna Science College, Patna University, Patna and Dr. A.K Ghosh, HOD Dept. of Chemistry, Patna Science College, Patna University, Patna for providing the necessary facilities for carrying out experiments.

**REFERENCES**


5. Indian Pharmacopoeia, ministry of health and family welfare, Controller of publications, Govt. of India, volume 1, 1996, A-78.


**Source of Support:** Nil, **Conflict of Interest:** None.