CHEMICAL STANDARDIZATION OF ‘KUNDUR’  
(Oleo-Gum-Resin of Boswellia serrata Roxb)

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ABSTRACT: A comparative study of the original and market samples of the KUNDUR (Oleo- 
Gum-Resin of Boswellia serrata Roxb.) with special reference to its chemical standardization and the qualitative and quantitative studies have been discussed here.

Introduction

The unani system of medicine contains about 1,400 drugs of herbal origin (1), continent. But due to lack of skilled collectors and poor condition of Unani pharmacy this system is suffering a lot. It is a fact that the drug stored for a long time exhibits gradually loss of active ingredients, which eventually affects their potency. Also considerable discrepancy regarding the quality of chemical contents has been reported in samples of the same drug obtained from different sources. Standardization of the indigenous drugs, therefore, is the need of the day.

The Oleo-Gum-Resin of B.serrata Roxb. (Kundur) is known to the human being since 1700 B. C. (2). It is commonly known as Salai or Olibanum and widely used in Indian System of medicine for various ailments. Most commonly it is used in rheumatism and urinary disorders (3).

Keeping its therapeutic importance, a comparative chemical study of the original and market samples of the drug has been made because its standardization has not been worked out so far.

Materials and methods

Kundur (Oleo-Gum-resin) was procured from the forest of Jhansi Division and stored accordingly to the prescribed method, where the market samples was collected from the local market of Aligarh. The qualitative analysis of different organic substances present in the both samples of the drug, was conducted according to the scheme of Bhattacharjee and Das (4). The extractive values were determined with the help of a Soxhlet’s apparatus in petroleum ether, ether, chloroform, benzene, ethanol and water.

The ash values total percentage of essential oil, the specific gravity and unsaponifiable part of the resinous matter were determined according to the standard methods(5). The refractive index of the oil was determined according to the method of Peach and Tracey (6) and Lindner and Harley (7)
respectively. Protein was calculated by the formula, 6.25 * N, where ‘N’ denotes the percentage of nitrogen present in the drug. Sterol/terpenes were determined (8) and fatty matter of the drug in n-hexane after filtration, the solvent was evaporated and the residue taken as fatty matter. The moisture content was determined by the distillation of drug with toluene (9).

Table-I

Qualitative tests for various chemical constituents present in the original and market samples of Oleo-Gum-Resin of *Boswellia serrata* Roxb.

| S. No. | Tested for          | Original sample | Market sample |
|-------|---------------------|-----------------|---------------|
| 1     | Alkaloids           | -ve             | - ve          |
| 2     | Amino acids         | + ve            | + ve          |
| 3     | Cardiac glycosides  | - ve            | - ve          |
| 4     | Flavonoids          | - ve            | - ve          |
| 5     | Glycosider          | - ve            | - ve          |
| 6     | Phenols             | + ve            | + ve          |
| 7     | Proteins            | + ve            | + ve          |
| 8     | Resins              | + ve            | + ve          |
| 9     | Saponins            | + ve            | + ve          |
| 10    | Sterols/Terpenes    | + ve            | + ve          |
| 11    | Carbohydrates       | + ve            | + ve          |
| 12    | Tannins             | + ve            | + ve          |

Note: These tests were made according to the method of Bhattacharjee and Das, 1969

Table-II

Chemical analysis of *B. serrata* Roxb. (KUNDUR)

| S. No. | Chemical constant         | Original sample   | Market sample |
|-------|---------------------------|-------------------|---------------|
| 1     | Petroleum ether exit.     | 22.29 ± 0.24      | 22.32 ± 0.16  |
| 2     | Ether ext.                | 41.10 ± 0.72      | 32.84 ± 1.23  |
| 3     | Chloro ext.               | 2.94 ± 0.02       | 2.34 ± 0.16   |
| 4     | Benzene ext               | 0.97 ± 0.06       | 0.16 ± 0.07   |
| 5     | Ethanol ext.              | 0.86 ± 0.02       | 0.63 ± 0.04   |
| 6     | Water ext.                | 11.88 ± 0.06      | 10.70 ± 0.35  |
| 7     | Total ash                 | 1.35 ± 0.05       | 2.55 ± 0.09   |
| 8     | Acid insoluble ash        | 1.05 ± 0.02       | 1.10 ± 0.06   |
| 9     | Water soluble ash         | 0.14 ± 0.02       | 0.45 ± 0.04   |
| 10    | Essential Oil             | 5.89 ± 0.10       | 5.55 ± 0.03   |
| 11    | Sp. Gr. Of resinous matter| 9896 ± 0.00       | 9799 ± 0.00   |
| 12    | Refractive index          | 1.4938 ± 0.00     | 1.4502 ± 0.00 |
| 13    | Unsaponifiable matter     | 31.08 ± 2.09      | 25.64 ± 0.85  |
| 14    | Carbohydrate              | 2.22 ± 0.03       | 2.16 ± 0.01   |
| 15    | Nitrogen                  | 0.95 ± 0.01       | 0.95 ± 0.01   |
| 16    | Protein                   | 5.93 ± 0.06       | 5.93 ± 0.10   |
| 17    | Sterols/Terpenes          | 1.75 ± 0.11       | 1.59 ± 0.10   |
| 18    | Fatty matter              | 44.69 ± 0.25      | 43.01 ± 0.42  |
| 19    | Moisture contents         | 6.80 ± 0.40       | 5.40 ± 0.40   |

Note: All the data are statistically analysed
Results and Discussion

Both the analysed samples of Kundur gave positive tests for amino acids, phenols, proteins, resins, saponins, sterol/terpenes, sugars and tannins, whereas the alkaloids, cardiac glycosides were absent (Table 1). The results of other analyses are summarized in table 2.

Our studies reveal that both the samples of Salai, obtained, showed slight variations in their physic-chemical contents. The higher percentage of the extracts. The higher percentage of the extracts in petroleum ether, ether, chloroform, benzene, ethanol and water were determined in the original sample, whereas the market sample has lower percentage. Same pattern was also visible in essential oil, specific gravity, unsaponifiable matter, refractive index of the oil, carbohydrates, sterols/terpenes, fatty matter and moisture content. The total, acid insoluble and water soluble ashes were found to be higher in the market sample in comparison to the original sample while the nitrogen and protein percentage was equal in both the samples.

On the basis of above observations, it can easily be concluded that the original sample is of first grade and market sample is of second grade. This difference is probably due to the faulty technique of collection, drying and storage. The high ash value in market sample indicates that the earthy material is more than original sample and it is due to the bad storage. The decrease in moisture content in the market sample shows that this sample was kept either for a long time or at a high temperature or was stored in some arid atmosphere. It is very clear that the drug should be stored in an air tight container to avoid the loss of chemical constituents. In the light of the above studies the analytical data of original sample be taken as standard for the market in future, because the analytical data of this sample is higher to the market sample. It is fresh one, is of high quality and directly collected from the forest. This standard can be maintained if the supply of the drug should be frequent in all the parts of the country and the collection, drying and storage should also be made in scientific manner.

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