Research Article

Remedy to Adulteration and Substitution of Gum Arabica: Fluorescence Analysis

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ABSTRACT

Adulteration and Substitution are the main problem's facing nowadays to Herbal drugs. The Best remedy to it is the Fluorescence analysis. Gum Arabica has a wide range of Pharmacological actions and has various therapeutic uses in Unani System of Medicine like Haemoptysis, Diarrhoea, Dysentery, Bleeding piles, Menorrhagia, Leucorrhea, Spermetorrhea. Powdered samples of Gum Arabica were screened for florescence characteristics with or without chemical treatment. The observation pertaining to their colour under UV light and in day light were noticed and reported. Fluorescence analyses of Gum Arabica were ruled out. The observation pertaining to their colors were noticed. Results are described according to the online standard color charts. The present study has provided evidence based scientifically validated data for Gum Arabica and will serve as a useful tool to minimize adulteration and substitution of Herbal drugs in general and in particular to Gum Arabica.

Keywords: Gum Arabica; Fluorescence analysis; Unani Medicine; Adulteration.

INTRODUCTION

Since Ancient times Gum Arabica is used in Unani System of Medicine to treat different ailments. Gum Arabic is an edible, dried, gummy exudate obtained from the injured stems and branches of Acacia. Gum Arabica is used in pharmaceutical, cosmetic and food industries as an emulsifier and stabilizer, and in some countries in the traditional treatment of patients with chronic kidney disease. Gum Arabica has wide industrial uses as a stabilizer, thickening agent and emulsifier, mainly in the food industry (e.g. in soft drinks, syrup, gummy candies and marshmallows), but also it is used in the textile, pottery, lithography, cosmetics and pharmaceutical industries.[1,2] it is commonly known as Gum acacia or Indian gum. it belongs to family leguminosae. Almost 85% of world supply of Gum acacia is from Sudan. it is soluble in water but insoluble in Alcohol. Gum Arabica is used intravenously in case of Haemolysis. it is found to be a good emulsifying agent for volatile oils, fixed oils and for liquid paraffin. it is a good binding agent used in the preparation of Lozenges, pastilles and compressed tablets. The main identification of Gum Arabica is that the solution of lead sub acetate gelatinizes the aqueous solution and like other gum it does not produce pink colour with the solution of ruthenium red.[3] Gum Arabica is found to have anti-inflammatory effects on multiple organs. it is found to be a safe food addictive. Nowadays it is being implemented in Nano-medicines and biosensors.[4]

Gum arabic (GA) or acacia gum is the exudate from the Acacia senegal and Acacia seyal trees, belonging to Leguminosae family.

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MATERIALS AND METHODS

Procurements of drug

The drug was procured from the registered crude drug dealer from the Local Market and was properly identified by experts from the Dept. of Pharmacology NIUM Bangalore.

Fluorescence Analysis [5-8]

To avoid substitution or adulteration, Gum Arabica was examined under day light (254 nm) and Ultra violet light (365 nm). Powdered Drug samples were screened for florescence characteristics with or without chemical treatment. The observation pertaining to their colour under UV light and in day light were noticed and reported.

RESULTS

Florescence Analysis

Powdered samples of Gum Arabica were screened for florescence characteristics in day light and under UV light with or without chemical treatment. The observation pertaining to their colors were noticed and given in Table 1. Results are described according to the online standard color charts.

Table 1: Florescence characteristics in day light and under UV light with or without chemical treatment

S. No	Colour in Day light	Colour under UV	Treatment
1.	Yellowish brown colour	Creamy colour	No treatment
2.	Light Maize Yellow	Yellowish green	NaOH with methanol
3.	Brown	Light green	5 % NaOH
4.	Saddle Brown	Light green	NaOH mounted with Nitrocellulose
5.	Light gold	Dull green	Nitrocellulose with amyl acetate

DISCUSSION AND CONCLUSION

To avoid substitution or adulteration, Gum Arabica was examined under day light (254 nm) and Ultra violet light (365 nm). Adulteration and substitution are the two main issues which need to be addressed. Commonly the Unani and other herbal drugs are used in powder form and the adulteration in powder form is very easy. it can be detected by observing the powder under UV light. The main aim of the study was to provide Evidence based solution to adulteration or Substitution of Herbal drugs in general and in particular to Gum Arabica.

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