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RESEARCH ARTICLE

PREPARATION AND EVALUATION OF NATURAL COLOR EXTRACT FOR AYURVEDIC SYRUP

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ABSTRACT

The plant *Butea monosperma* is very popular among the peoples of Northern Ghana, where the leaves are used in soups; and calyces for soft drinks and also used medicinally. It has been found to possess several health benefits. The flower has a very rich orange colour, which this study aims at investigating its suitability as a coloring agent in pharmaceutical syrup.

Materials and Methods: The plant parts (flowers) are used in experimental work for investigating the suitability of *Butea monosperma* extract as coloring agent for pediatric syrup. 1kg of dried *Butea Monosperma* flowers were weighed out and spread out in a thin layer. After authentication, sample of *Butea monosperma* was washed for ten seconds in water (to avoid losing colour). Excess water was blotted from the sample with a clean towel, and dried in a hot air oven for four hours at 300°C before the extraction procedure. Then the solvent for extraction (water, drug solvent ratio taken = 1:8) was filled in Soxhlet apparatus. After completion of the extraction procedure, the extract was taken out and evaporated up to semisolid consistency and then amount in percentages was determined in % w/w.

Result: The colour extract from *Butea monosperma* is found suitable as a pharmaceutical coloring agent. Tartrazine can be replaced with this natural source of colour, promoting the health of our people.

Keywords: *Butea Monosperma* Extract, Coloring agent, Tartrazine, Pediatric syrup.

1. INTRODUCTION

Tartrazine widely used as colouring agent in pharmaceuticals has been found to be carcinogenic¹. If the colour extract from *Butea monosperma* is found suitable as a pharmaceutical colouring agent, then Tartrazine can be replaced with this natural source of colour, promoting the health of our people. The search for colouring agents with minimal or no toxic side effects has led to the discovery of several plant parts yielding various colors for food, cosmetics, textiles and some pharmaceutical dosage forms. Plant colour has been found to contain flavonoid².

Colors actually make food appear good and more appetizing. Different food colors and dyes are included to add a zing to the food. All these food colors are food dyes and colorings that occur either naturally or are created artificially. In technical terms, a food dye is a food additive substance that is added to the food to change or improve the food colour. It may or may not enhance the flavour of the food³.

2. MATERIALS AND METHODS

Butea monosperma and Tartrazine were purchased from the local market of Mandsaur, M.P.

2.1 Method of Extraction from *Butea Monosperma* Flower

The powdered drug was weighed and filled in the thimble of Soxhlet apparatus. After that the thimble was fixed with the round bottom flask and assembly was attached to the condenser. Paraffin wax was put at the joints of the assembly for the easy removal of the assembly at the completion of the extraction procedure⁴. Then the solvent for extraction (water, drug solvent ratio taken = 1:8) was filled. After completion of the extraction procedure the extract was taken out and evaporated up to semisolid consistency and then amount in percentages was determined in % w/w⁵.

Solvent system – water

Drug solvent ratio-1:8

Time of extraction- 6 hrs

Temperature for extraction- 60-70°C

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2.2 Microbial Test of the Extract of *Butea Monosperma* Flower

The methanol extract (5% w/v) and aqueous extract (5% w/v) of *Butea monosperma* were prepared for microbial activity⁶. Ten plates of nutrient agar were inoculated individually by *Escherichia coli*, *Proteus vulgaris*, and *Klebeisella pneumoniae* by spread plate method separately. Five plates were tested for aqueous extract tests, and five for methanol extract test. Using a sterile cork, wells were formed in nutrient agar plates for sterile inoculation of both methanolic and aqueous extracts of *Butea monosperma*. The same procedure was repeated, using tartrazine powder⁷. The plates were incubated for 24 hours at 37°C, and different zones of inhibition were observed and documented with different microbial plates respectively. Liquorice, Glycyrrhiza glabra L. syrup was prepared for the study by standard method. Stability of natural colour extract and tartrazin in syrup was checked at room temperature. Change in colour was noted down⁸.

3. RESULT

3.1 Microbial Test of the Extract of *Butea Monosperma* Flower



Figure 1: Antimicrobial activity of *Butea monosperma* extract against *E. coli*.



Figure 2: Antimicrobial activity of *Butea monosperma* extract against *Klebeisella pneumonia*



Figure 3: Antimicrobial activity of *Butea monosperma* extract against *proteus vulgaris*

4. DISCUSSION

The yield was very encouraging, implying that the use of *Butea monosperma* extract as a coloring agent is cost effective. Colour, taste, odor and form of the *Butea monosperma* conform to general description of samples described on the internet. Colour value obtained (0.258) conformed to the BP standard, and was retained within BP Standards for up to six months⁹.

Microbiological tests revealed that *Butea monosperma* extract has antibacterial properties but very little antifungal properties; thus substantiating folklore medicine claims as to its use in healing syphilis, gonorrhoea and other bacterial infections. Methanolic extracts had better antimicrobial activity¹⁰. Tartrazine had no antibacterial or antifungal properties; thus *Butea monosperma* has a great advantage over Tartrazine in its use as a colouring agent.

Tartrazine, being synthetic and highly concentrated into a powder form has an advantage of being used as a 1% or 2% solution; whereas a 33% solution of

aqueous extract of *Butea monosperma* achieved the same colouring effect. Nevertheless, the health benefit of the natural product outweighs this disadvantage; especially since tartrazine has been found to be carcinogenic^{11, 12}.

The pure extract and ayurvedic syrups formulated with the extract are best stored at room temperature and also at 37°C. Generally, all pediatric syrups must be stored in amber bottles to avoid exposure to light

which causes loss of colour and potency of the drugs. pH was found to decrease with time, though Pediatric Syrups coloured with amaranth had a slower decrease than those coloured with extract of *Butea monosperma*. Using citrate buffer to attain pH 5 provided good pH stability over the four month test period. The study results suggest that colour extract from *Butea monosperma* flower may be used as coloring agent for ayurvedic syrups.

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