Preparation and Standardization of A Polyherbal Formulation

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ABSTRACT

Standardization of herbal formulation is essential in order to assess the quality of drugs. The present paper reports preparation and standardization of a polyherbal formulation which contains *Syzgium cumini*(bark), *Mangifera indica*(bark), *Ficus bengalensis* (bark), *Ficus religiosa*(bark), *Lawsonia inermis* (leaves), *Juglans nigra* (bark), *Terminalia bellirica* (fruits) and *Hibiscusrosa sinensis (*bark). This Ayurvedic formulation is used to treat diabetes mellitus. Here we calculate and discussed about Extractive value, Moisture content, Ash value, Carr's index etc. These parameters are required for authentication of any herbal drug and its formulation.

Keywords: Standardization, Extractive value, Carr's index, Poly herbal.

1. INTRODUCTION

In the present era, market of all commodities has become global. Health has been of utmost importance since ancient times for the mankind. Market of health-related products has been active and these products are manufactured at different parts of the world and sold all over. Standardization is necessary to make sure the availability of a uniform product in all parts of the world [1]. Standardization assures a consistently stronger product with guaranteed constituents. WHO collaborates and assists health ministries in establishing mechanisms for the introduction of traditional plant medicines into primary healthcare programs, in assessing safety and efficacy, in ensuring adequate supplies, and in the quality control of raw and processed materials [2]. Herbal formulations in general can be standardized schematically as to formulate the medicament using raw materials collected from different localities and a comparative chemical efficacy of different batches of formulation is to be observed [3]. A preparation with better clinical efficacy has to be selected. In India, diabetes is a serious disease due to irrational food habits. Most of the hypoglycemic agents used in allopathic practice to treat diabetes mellitus are reported to have side effects in long term use [4]. Hence, there is the need to search for effective and safe drugs for these ailments. Based on the above rationale the present study was undertaken with an aim to standardize some herbal antidiabetic drugs based on their physicochemical characteristics. The present paper reports the Preparation and standardization of herbal formulation based on organoleptic characters, physical characteristics, and physicochemical properties.

2. MATERIAL AND METHODS

2.1. Plant material

Following eight herbal anti-diabetic drugs (10 gm each) were chosen: *Syzgium cumini*(bark), *Mangifera indica*(bark), *Ficus bengalensis* (bark), *Ficus religiosa*(bark), *Lawsonia inermis* (leaves), *Juglans nigra* (bark), *Terminalia bellirica* (fruits) and *Hibiscusrosa sinensis (*bark). All eight herbs were procured from different parts of the state (Uttarakhand) and were authenticated by Department of botany F.R.I. Dehradun.

2.2. Preparation of Polyherbal formulation

Formulation was made by taking equal proportion of each powdered drugs. All the procured and authenticated individual drugs were dried in shade and cleaned by hand sorting. The individual drugs were then crushed using willing grinder and passed through mesh no. 40. The individual drugs were then weighed as per the quantity required. The drugs were mixed geometrically using a double cone blender. The mixed formulation was unloaded, weighed, and packed in labeled glass bottles [5].

2.3. Physicochemical properties

Organoleptic and Physio-chemical studies like water soluble extract, alcohol soluble extract, ether soluble extract, hydroalcoholic soluble extract, total ash, water soluble ash, acid insoluble ash, water, moisture constant at 105°C, bulk density, tap density, Hausner ratio, Carr's index ph of suspension were carried out as per the WHO guide lines [6, 7].

3. RESULTS AND DISCUSSION

The Antidiabetic polyherbal formulation was slightly brown colored, bitter in taste and a characteristic bitter odour. Physio-chemical parameters of herbal formulation are tabulated in (Table-1). Deterioration time of the plant aterial depends upon the amount of water present in plant material. If the water content is high, the plant can be easily deteriorated due to fungus. The loss on drying at 105°C in formulation was found to be 5.10 %. Total ash value of plant material indicated the amount of minerals and earthy materials present in the plant material. Analytical results showed total ash value of 12.40 %. The amount of acid-insoluble siliceous matter present in the plant was 0.9 %. The water-soluble extractive value indicated the presence of sugar, acids and inorganic compounds. Less or more extractive value indicates addition of exhausted material, adulteration or incorrect processing during drying, or storage or formulating [8, 9]. The water-soluble extractive value was found to be 5.4 %. The alcohol-soluble extractive value was found to be 11.8 %.The ether soluble extractive value was determined of the formulation and it was found to be 6.5%.The hydro alcoholic value of the formulation was also determined and it was found to be 9.6%. Tapped density gives information on consolidation of a powder. The bulk density of the polyherbal formulation was found to be 0.315 g/ml and the tapped density was found to be 0.441 g/ml. The Hausner ratio and Carr's index are both measures of the flow properties of powders. The smaller the Carr's Index the better the flow properties. The Carr's Index and Hausners ratio for the polyherbal formulation were found to be 28.5% and 1.4 respectively. The observed pH values of 1% and 10% suspensions of the formulation were found to be 5.3 which indicate suitability for human use.

Table: 1 Different Physiochemical Parameters

Parameters	Mean value (%w/w), n=4
Water soluble extractive value	5.4%
Alcohol soluble extractive value	11.8%
Ether soluble extractive value	6.5%
Hydroalcoholic extractive value	9.6%
Total Ash	12.4 %
Acid insoluble Ash	0.9%
Water soluble Ash	2.9%
Carbonated Ash	9.3%
Sulfated Ash	10.3%
Nitrated Ash	9.6%
Bulk density	0.315 g/ml
Tapped density	0.441 g/ml
Carr's index	28.5%
Hausner Ratio	1.4

4. CONCLUSION

In the present study it was concluded that the physicochemical parameters such as the water-soluble, alcohol-soluble, and ether-soluble extractive values, moisture content, bulk density, tapped density, Carr's index, Hausner's ratio, pH, water-soluble ash, acid-insoluble ash, and organoleptic characteristics can be efficiently used for standardization of polyherbal formulation. The results obtained from the study could be utilized as a reference for setting limits for the reference standards for the quality control and quality assurance of these drugs.

5. REFERENCES

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