



Research Paper

Proximate and Phytochemical Analysis of *Cassia Tora* Leaves

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ABSTRACT:- Recently Proximate analysis and phytochemical analysis of leaves of *Cassia tora* L. from the campus of Government Vidharbha Institute of Science and Humanity, Amravati had been investigated. The leaves sample contained tannin, saponin, protein, steriods, terpenoids, carbohydrate, alkaloids, flavonoids and glycosides. Proximate analysis of moisture, ash, fat, calcium, magnesium, iron, nitrogen and solubility were check. The values of it is moisture (58%), cold water (33%), hot water (34%), 1%NaOH (43%), 1%HCl (47%), benzene +alcohol (30%), ash content (4%). All these results indicate that the leaves of these *Cassia tora* L. contains nutrients and mineral elements that may be useful in nutrition. The presence of some phytochemicals like tannin, saponin and steriods explained medicinal action of the plant encountered in its therapeutic uses.

KEYWORDS:- Proximate composition, Phytochemical analysis, *Cassia tora* L.

I. INTRODUCTION

In the recent years, there has been a gradual increase of interest in the use of medicinal plants in developing countries as herbal medicines are safe and without any adverse side effects compared to synthetic drugs. Thus a search for new drugs with better and cheaper substitutes from plant origin is a natural choice. The medicinal value of these plants lie in some chemical substance that produce a definite physiological action on the human body^[1-2]. The exhaustive literature survey reveals that only proximate and phytochemical analysis of seeds of *Cassia tora* L. have been investigated but proximate and phytochemical analysis of leaves is still lacking hence this work had been carried out.

Cassia tora L is an annual foetid herb with a height of 25cm to 100cm. It is found in Asian region but in India it is mainly found in Satpura region in Maharashtra. It has pinnate leaves which are about 10-12cm long. *Cassia tora* is very stress tolerant and is an easy plant to grow in India, it occurs as wasteland rainy season weed. Young leaves can be cooked as a vegetable.

Proximate analysis of food is the determination of the major components of food which include moisture, protein, solubility, ash, proximate analysis is a system of analysis of nutrients also termed "conventional analysis" in which the gross components (protein, fat, carbohydrate, ash) of the food material rather than individual nutrients (amino acid, fatty acid, monosacharides) are determined^[3].

Phytochemical are chemical compounds derived from plants that are non-nutritive secondary metabolic compounds occurring in different parts of plants. They are important as protective and disease fighting compounds which help the body to prevent of fight against diseases and so are required by the human body to sustain life. Their therapeutic use in prevention or fighting a number of diseases is the basis of their extensive use in traditional medicine. Some of the phytochemicals are water soluble while others are not^[4].

II. MATERIALS AND METHODS

The leaves of *Cassia tora* L. were collected from campus of G.V.I.S.H. Amravati, Maharashtra, India from 15th October to 25th December 2014. They were properly shade dried indoors in an airy place, crushed, powdered and stored in dry opaque bottles.

Proximate analysis: Moisture, ash and solubility were determined using the Association of official analytical chemists methods^[5].

Phytochemical analysis: The phytochemical in the leaves were determined by elemental analysis of magnesium, calcium, sulphur, iron, sodium and chlorine were investigated by color test using appropriate chemicals and reagents and also the filtrate used to test for phenols, tannins, saponins, glycosides, flavonoids, steroids and alkaloids^[6].

III. RESULT

Proximate analysis of the *Cassia tora* Leaves

| Sr.No. | Content | Per 100gm | Percentage |
|--------|-------------------|--------------------|------------|
| 1 | Moisture | 42gm (± 2 gm) | 58% |
| 2 | Ash | 96gm (± 1 gm) | 4% |
| 3 | 1%NaOH | 57gm (± 1 gm) | 43% |
| 4 | 1%HCl | 53gm (± 1 gm) | 47% |
| 5 | Cold water | 67gm (± 1 gm) | 33% |
| 6 | Hot water | 65gm (± 1 gm) | 35% |
| 7 | Benzene + alcohol | 70gm (± 1 gm) | 30% |

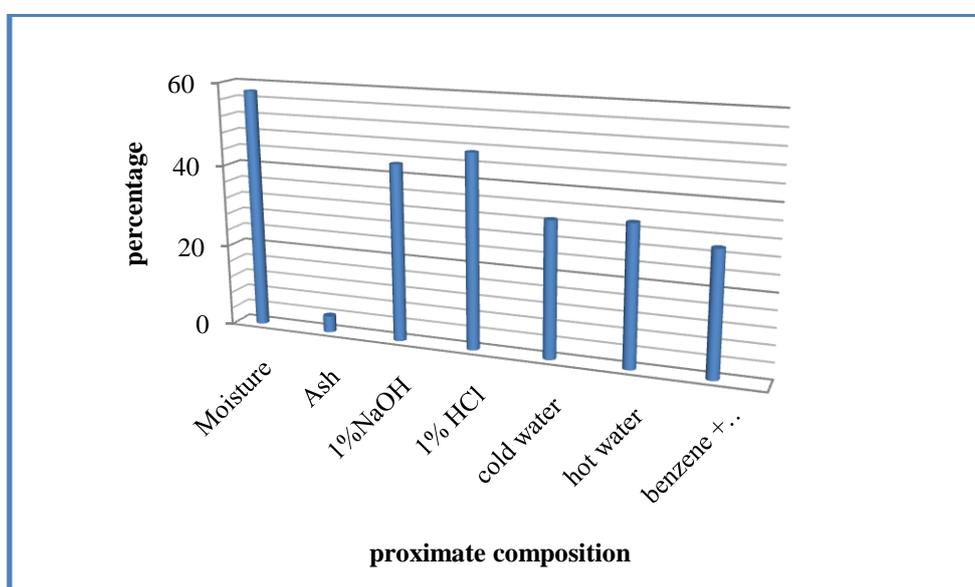


Fig 1: proximate composition of *cassia tora* leaves

Phytochemical analysis of the *Cassia tora* L. leaves

| Sr.No. | Content | Result |
|--------|--------------|--------|
| 1 | Magnesium | + |
| 2 | Calcium | + |
| 3 | Sulphur | + |
| 4 | Iron | + |
| 5 | Sodium | + |
| 6 | Chlorine | + |
| 7 | Alkaloids | + |
| 8 | Tannin | + |
| 9 | Saponin | + |
| 10 | Flavonoids | + |
| 11 | carbohydrate | + |
| 12 | Protein | + |
| 13 | Steroids | + |
| 14 | Terpenoids | - |
| 15 | Glycosides | + |

“+” = present, “-” = absent

IV. DISCUSSION

The results obtained from proximate analysis of *Cassia tora* L. leaves establishes that they have moderate moisture content (58%) so storage life would be high^[7]. The values for ash content were 4%. The ash content of the leaves were lower than that of some leafy vegetables commonly consumed such as *Talinum triangulare* (20%), *Occimum gratissimum* (8%) and *Hibiscus esculentus* (8%)^[8]. The high ash content is a reflection of the mineral contents preserved in the food materials. The result therefore suggest a high deposit of mineral elements in the leaves^[9]. The phytochemical analysis showed that leaves contain tannins, saponins, steriods, proteins and carbohydrates. These are known to exhibit medicinal activity as well as physiological activity^[10]. Steroid have importance and interest in pharmacy due to their relationship with such compounds as sex hormones^[11]. Various studies have shown that saponins although non toxic can generate adverse physiological responses in animals that consumes them. They exhibit cytotoxic effects and growth inhibition against a variety of cell making them have anti-inflammatory and anticancer properties. They also show tumor inhibithing activity on animals^[7].

V. CONCLUSION

This type of study will be applicable for the pharmaceutical, medicinal, agricultural, industrial and biochemical sciences. Young leaves are used as a vegetable by rural peoples and they used for hotness in body that's mean this leaves have a chemical which is used for medicine. So the further study will be carried out on this plant.

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REFERENCES

- [1]. Edeoga H.O., Okwu D.E., & Mbaebie B.O., *African J. Biotech.*, 4, 2005, 685-688.
- [2]. Olaemi F.F., *Advance Journal of Food Science and Technology*, 3(4), 2011, 233-237.
- [3]. Prohp T.P., Ihimire I.G., Madusha A.O., Okpala H.O., Erevor J.O. & Oyinbo C.A., *Pakistan Journal of Nutrition*, 5, 2006, 114-116.
- [4]. Adefagha S. & Obah G., *Food Processing and Technology*, 1(2), 2011, 2-6.
- [5]. AOAC, Official methods of analysis, *Association of official Analytical Chemists*, 15, 1990.
- [6]. Odebisi O.O. & Sofowora E.A., *Inter-African symposium on traditional pharmaco poeia and African medicinal plants*, 115, 1979, 216-220.
- [7]. Oke D.G., *Chemical Science Transactions*, 3(3), 2014, 1172-1178.
- [8]. Akindahunsi A.A. & Salawu S.O., *African J. Biotech.*, 4, 2005, 497-501.
- [9]. Anita B.S., Akpan E.J., Okon P.A. & Umoren I.U., *Pakistan J. Nutr.*, 5, 2006, 166-168.
- [10]. Sofora L.A., *Medicinal plants and traditional medicine in Africa*. (Spectrum books Ltd.)1993, p.55-71.
- [11]. Okwu D.E., *Global J. Pure Appl. Sci.*, 7, 2001, 455-459.