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NOTE

Detection of Elements Present in Leaves of Tanner's cassia

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Cassia auriculata (L) commonly konown as Tanner's cassia is a medicinal plant which grows abundantly all over India. It is widely used in Ayurvedic medicine as tonic, astringent and remedy for dibeties, conjectives and opthalmia. Leaves of *Cassia auriculata* L are useful in chronic fever, anthelmintic. The metals content of *Cassia auriculata* leaves was carried out. It was found that potasium, calcium, magnesium, manganese, iron, zinc along with copper, phosphorous. Quantities of calcium, sodium, copper were found negligible in it but iron, zinc, magnesium, manganese are the potential source.

Key Words: *Cassia auriculata* (L), Atomic absorption spectroscopy, Flame photometry, Colorimetry elements.

Cassia species (Family: Leguminosace-cesalpineace) are well known for their laxative and purgative properties and are also used in treatment of skin diseases[1]. The laxative effect is mainly due to presence of hydroquinone derivatives. The commonly used species are *Cassia angustifolia, C. acutifolia, C. fistuls, C. sieberiana, C. occidentalis, C. spectabilis, C. tora, C. alata* and *C. podocarpa*[2,3]. Most of the *Cassia* species are known to contain sennosides, rehin, emodin, aloe-emodin,1,3,8-trihydroxy-2-methyl anthroquinone[4]. Di-(2-ethyl)hexylphthalate has been isolated from the leaves of *C. auriculalta* and seeds are rich in oleic and linoloeic acids[5]. *C. auriculalta* (L) is small perennial shrub growing widely in dry regions of central India, Western Peninsula and western Rajasthan[6]. The bark is astringent and is valuable tanning material[5], fruits are anthelmintic, flowers and pods are used in diabetes and urinary disorders[7].

Most of the plants of this genus cassia are well known in Indian system of medicine for their cathartic, purgative and antibiotic properties. Many compounds of structural significance and medicinal importance have been reported from different species of this genus[8]. Leaves of *Cassia auriculata* (L) are useful in chronic fever and as anthelmintic. It is also good for ulcers, leprosy, skin diseases. Several reports were available on biological activity of *Cassia auriculata* L[9]. Antimicrobial activity of metal complexes prepared from the isolated compounds of *Cassia auriculata* (L)

was reported[10]. *Cassia auriculata* (L) demonstrated the greatest potential to cause the leakage of potassium and sodium in intracellular materials. The mechanisms of antimicrobial activity of extracts from these plants is due to leakage of these cellular constituents and thus justify their use in ethno-medicine[11]. Hence the present work is an analytical study to determine elements present in leaves of *Cassia auriculata* (L).

A Perkins-Elmer 3110 atomic absorption spectrophotometer was used for the quantitative determination of the transition elements. A flame photometer of madiflame, model 127 was used for the determination of alkali and alkaline earth metals. Photoelectric colorimeter of systronics, model 113 was used for phosphorous. Ash was prepared by taking 1 g shed dried and powdered sample of leaves and stem and keeping it in muffle furnace at 550 ºC till constant weight was obtained. The major constituent of ash was determined qualitatively and quantitatively. For the detection of metals the ash was converted to chloride and was tested for metals by applying standard procedures. Initially the ash was dissolved in 10 % HCl (5.0 mL) and material was filtered through Whatmann filter paper no. 40. The residue was made chloride free (tested with $AgNO_3$) by washing with hot water. The acid soluble and acid insoluble parts of the ash were determined gravimetrically (Table-1). The filtrate was diluted to 50 mL and used to estimate metal contents by using standard methods (Table-2).

TABLE-1
ASH FROM *Cassia auriculata (L)*

Particulars	Leaves sample (%)
Acid soluble ash	91.58
Acid insoluble ash	6.60

TABLE-2
ELEMENT CONTENTS OF *Cassia auriculata (L)*

Percentage	Element Method	Leaves
Nitrogen	Kjeldahl's method	3.08 %
Phosphorous	Colorimetric method	0.95 %
Potash	Flame Photometry	1.39 ppm
Calcium	Flame Photometry	0.07 ppm
Sodium	Flame Photometry	0.57 ppm
Zinc	Atomic absorption spectrophotometry	7.21 ppm
Copper	Atomic absorption spectrophotometry	1.19 ppm
Manganese	Atomic absorption spectrophotometry	4.30 ppm
Iron	Atomic absorption spectrophotometry	9.77 ppm

Trace elements are spark plugs of life because they are required to activate hundreds of enzymes reactions within the body. The acid soluble leaves of *Cassia auriculata* (L) showed the presence of common elements like potassium, calcium,

sodium, magnesium, iron, manganese, zinc along with copper and phosphorus. Quantities of calcium, sodium, copper, potassium were found negligible in it, but iron, zinc, manganese and magnesium are major constituents. Herbs are also classified as stimulatory and sedative based upon their mineral content, if the herbs are rich source of potassium, phosphorus and iron they are stimulatory herbs[12]. Those are rich in calcium and magnesium are sedative herbs[12]. As the leaves of *Cassia auriculata* (L) are rich in iron, copper, potassium acts as stimulatory herbs. Hence these contents lead to act as laxative as well as purgative treatment in skin diseases. Potassium plays important role in treatment of diabetes as it has effect on secretion of insulin. Absolute zinc deficiency symptoms are stress, illness, increased thyroid activity, hyperadrenal function, skin lesions, stretch marks, slower healing wounds, spot on nails, sickle cell anemia and juvenile diabetes[12]. Hence it is widely used for diabetes. Iron deficiency results in sweating, rapid pulse, prolonged sleep, cessation of the menses, avertion to eating and heavy feeling of body[12]. Skeletal abnormalities, retarded bone growth, change in hair colour to growth, abnormalities in pancrease, disturbances in lipid and carbohydrate metabolism can develop due to manganese deficiency[12].

Thus, leaves of *Cassia auriculata* (L) can be used to overcome these deficiencies as it is rich source of iron, zinc, manganese and magnesium but also provides other micronutrients like calcium, sodium, copper, potassium.

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