



Acacia nilotica: analysis of seeds

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Abstract: The study of natural product is one of the oldest scientific disciplines. Plants have been the source of phytochemicals and widely used by tribals for medicinal purposes. Since ages, tribals have been consuming seeds of family gramineae. As tribals are physically tough, an insight into their food habits was done. Tribals of Chittorgarh have been consuming seeds of Acacia nilotica since ages. In the present communication, we have carried out nutritive analysis of Acacia nilotica seeds so that consumption by tribals in diet and medicine is fully justified.

Keywords : Ehytochemical, seeds, medicinal uses, forests.

I. INTRODUCTION:

Acacia nilotica is distributed along road sides, dry semi dry zones of the world. It belongs to family Mimosaceae. It is commonly called babool, gum Arabic tree, Egyptian thorn {1,2}. It is a multipurpose nitrogen fixing legume tree. Parts of the plant are highly valued medicinally in traditional system. Flowers are used for gastro intestinal disorders. {3} Leaf extract of the plant is used for treating cancer (4,5). Extract of root is used for treatment of cough and bacterial infections (6,7,8). The plant is also a resource of phytochemicals like alkaloids, fatty acid, gums, flavonoids and diterpenes (9). Plant is also rich in amino acid, Potassium, Phosphorus, Magnesium, Iron, and Manganese (10). Pods (11) of the plant are 7-15 cms long and black in colour.

Each seed pod contains 8-12 seeds. Though this plant has been extensively investigated and found to be the source of many phytochemicals, but work on seeds of Acacia nilotica has received scanty attention. In this communication, we have carried out analysis of seeds of Acacia nilotica.

Experimental The seeds were collected from forests of Kota and Chittorgarh divisions of Rajasthan. These were washed and air dried for 6 hrs. Identification of seeds was done with the help of R.U. B.L.

Herbarium. Seeds were grounded in Cyclotec (Tecator). Ashing was the ___ done in muffle furnace (Tempo) ___ make. ___ Calcium ___ was ___ determined titrimetrically ___ using centrifuging machine ___ . Iron ___ and ___ Phosphorus ___ were ___ determined ___ by ___ spectro photo meter. ___ For ___ determining, proximate analysis methods of A.O. A.C. were followed.

Moisture

Weighed about 10 grams of material in a previously weighed porcelain dish. Dried material in an air oven maintained at 105 ° for 5 hours. Cooled it and weighed. Heated it again at the same temperature for 30 minutes. Repeated the process of heating, cooling and weighing till difference in weights between successive readings was less than 1 milligram. % moisture = $(\text{initial weight} - \text{final weight}) \times 100 / \text{weight of the sample}$. Ash was determined in muffle furnace at 550 ° C. Weighed 5 to 10 gram of sample in a silica crucible. Ignited the material by first heating over a low flame till it gets completely burnt. Repeated the process of heating and cooling till two consecutive weights were same and ash was white in colour. (12)

% Ash = $\text{weight of the Ash} \times 100 / \text{weight of the sample}$.

Protein

Protein content was determined by estimating nitrogen content of the material and multiplying nitrogen value by factor of 6.25. Estimation of nitrogen (13) was done by Kjeldahl method.

Fat

It was determined by extracting the dry material with hexane % fat = $\text{weight of hexane extract} \times 100 / \text{weight of the sample}$.

Crude fibre

Weighed accurately 2.5 gram of the sample and transferred it in a 500 ml beaker. Added 250 ml of 0.255 N sulphuric acid, boiled the mixture for 30 minutes keeping the volume constant by adding water at frequent intervals. Filter the mixture using muslin cloth and washed the residue with hot water till it becomes free from acid. Transfer the residue to the beaker and added 250 ml of 0.313 N NaOH to it.

Repeated boiling and washing as done with acid, finally transferred residue to a previously weighed and dried crucible. Dried the crucible in oven at 105 °C. Repeated the process of weighing and drying till two consecutive readings were same. Crude fibre was calculated according to the formula.

% Crude fibre = $\frac{\text{weight of the fibre} \times 100}{\text{weight of the sample}}$

Minerals

First of all ash solution was prepared. Calcium was estimated as calcium oxalate by precipitating calcium from ash solution with saturated ammonium oxalate solution.

Phosphorus

Phosphorus was estimated by measuring colorimetrically the blue colour formed when ash solution is treated with ammonium molybdate and phosphomolybdate thus formed is reduced.

Iron

Iron was determined colorimetrically making use of the fact that ferric ion gives blood red colouration with potassium thiocyanate solution.

Sodium and Potassium

Sodium and potassium were estimated flame photometrically. The pertinent data of proximate composition and mineral element analysis of seeds are given in the table below

Proximate analysis

Moisture 4.63%

Ash 5.14%

Protein 7.23%

Fat 20.30%

Crude fibre 3.65%

M.i.n.e.ra.! Element Composition Calcium 566.64mg/100gm, Phosphorus 450.23mg/100gm Iron 21.04 mg/100 gram

Sodium 0.90 ppm,

Potassium 6.8 ppm

II. RESULTS AND DISCUSSION

As seen from the results of proximate and mineral element composition seeds of *Acacia nilotica* are rich in calcium, phosphorus, iron, protein and fat. These seeds exceed the requirements of recommended dietary allowances for adult men (14). Seeds of *Acacia nilotica* are also found to be rich in sodium content.

III. CONCLUSION

Thus our study on the seeds of *Acacia nilotica* to explore newer and effective sources of food is justified. The cultivation of such trees should be encouraged so that they can serve as a nutritive food for human and animals both. The cultivation of such ~ should be encouraged.

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