



PROXIMATE ANALYSIS OF ROOT, STEM AND LEAVES OF *MILLETIA AURICULATA*

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ABSTRACT

This work was carried out to investigate the proximate analysis such as Moisture, ash content and cold water, hot water, 1% NaOH and HCl solubility of root, stem and leaves samples of *Milletia Auriculata*. This study showed that the studied root, stem and leaves of plant contained a low moisture content. These results directly hamper the drug effect, drug activities and also the side effects of drug. In rural areas where access to modern health facilities is limited by the level of development, plants/herbs remain the main stay of the health care system.

KEY WORDS: *Milletia Auriculata*, Proximate analysis, Moisture, ash content and cold -hot water, 1% NaOH and HCl solubility.



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INTRODUCTION

In recent years, there has been a gradual revival of interest in the use of medicinal plants in developing countries because herbal medicines have been reported safe and without any adverse side effect especially when compared with synthetic drugs. Thus searches for new drugs with better and cheaper substitutes from plant origin are a natural choice. The medicinal value of these plants lie in some chemical substances that produce a definite physiological action on the human body¹. The medicinal plants are rich in secondary metabolites, which are potential sources of drugs and essential oils of therapeutic importance. Medicinal plants are widely used in various ailments, because of their safety besides being economical, effective and their easy availability². According to World Health Organization (WHO) traditional medicines³⁻⁴ are relied upon by 65–80% of the World's population for their primary health care needs. Herbal medicine, based on their traditional uses in the form of powders, liquids or mixtures, has been the basis of treatment for various ailments in India since ancient times. The use of herbs as complementary and alternative medicine has increased dramatically in the last 20–25 years⁵. Plants produce bioactive molecules in a diverse range making them a rich source of different types of medicines⁶⁻⁸. Plants also continue to be a major source of medicines. Thirty to forty percent of today's conventional drugs used in the medicinal and curative properties of various herbal supplements, botanicals, nutraceuticals and drug are derived from plants⁹. Proximate analysis of *Cissus quadrangularis* Linn Moisture, ash content and cold water, hot water, 1% NaOH and HCl solubility, root, stem and leaves samples have been investigated¹⁰. Chemical Analysis of a Fodder Tree Leaves (*Millettia auriculata*). *Millettia auriculata*

Baker ex Brandis belongs to leguminosae family. It is a sub-erect shrub, more often a woody climber, found throughout the sub-Himalayan tract. The leaves and twigs of the plant are lopped for cattle fodder¹¹. In search of new leads: a closer look at the therapeutic potential of the constituents of *Millettia thonningii*, *Millettia pachycarpa* and their structural analogues. This review discusses the potential applications of isoflavonoids from *Millettia thonningii* and *M. Pachycarpa* into their pharmacological applications¹². The phytochemical, spectroscopic characterization and antibacterial efficiency of *urginea indica*, Kunth and *cyclea peltata*¹³. Seed ethanolic extract showed high content of phytochemicals, highest antimicrobial and antioxidant activity and results supported the usage of *Vernonia anthelmintica* in folk and traditional medicine¹⁴. Hence the aim of this work is to determine the proximate composition of root, stem and leaves of *Millettia auriculata* plant in order to ascertain its safety or otherwise to man.

MATERIALS AND METHODS

First the site was selected in Nagthana, Tal-Warud, Dist-Amravati of Maharashtra State. Before picking the whole plant, the soil was moisten. The plant was collected in January-2015. They were washed smoothly with distilled water, the root, stem and leaves were separated from plant by scissor and all were shed dried at room temperature. Each part of sample was crushed separately in pestle-mortar to isolate fine powder. This powder was treated as sample powder for various analyses. The samples were taken for the proximate analysis viz, percentage of moisture content, ash content, solubility in cold water, hot water, 1% NaOH and 1% HCl.^{10,15}



Figure 1
Root, Stem and Leaves Of Millettia Auriculata

1) Moisture content

Silica crucible was taken; it was kept in an oven at 100°C and weighed. This process was repeated till silica crucible showed constant reading. 1 gm of each root, stem and leaf samples were taken in different crucibles and crucibles were kept in oven at 110°C for 1 hr. It was

then weighed after cooling and kept in oven again till it showed constant weight.

2) Ash content

Silica crucible was taken; it was kept in an oven at 100°C and weighed. This process was repeated till crucible showed constant reading. Moisture free 1 gm of each

root, stem and leaf samples were taken in different crucibles and heated over blue flame of Bunsen burner for 3 hrs. and then placed in a furnace at 600°C for 5 hrs. Samples were totally converted into white ash. This process was repeated till it showed constant weight.

3) Cold water solubility

In 200ml. glass beaker oven dried 1gm. dried samples of root, stem and leaf were taken. To it, 100ml. distilled water was added and it was kept for 1hr. It was filtered through previously weighed sintered glass crucible washed with distilled water, dried in oven at 110°C and weighed.

4) Hot water solubility

In 200ml. glass beaker dried 1gm. of each sample of root, stem and leaf taken. To it, 150ml. distilled water was added and it was heated over boiling water bath for 1hr. and filtered through previously weighed sintered glass

crucible. Residue was washed with hot water. Dried in oven at 110°C and weighed.

5) 1% NaOH solubility

In 200ml. glass beaker 1 gm of dried samples of root, stem and leaf were taken. To it, (1%, 100ml) aqueous sodium hydroxide solution was added. It was heated over water bath for 1hr. and filtered through previously weighed sintered glass crucible, washed with distilled water, dried in oven at 110°C and weighed.

6) 1% HCl solubility

In 200ml. glass beaker 1gm. of dried samples of root, stem and leaf were taken. To it, (1%, 100ml) hydrochloric acid was added. It was heated over water bath for 1hr. and filtered through previously weighed sintered glass crucible, washed with distilled water, dried in oven at 110°C and weighed.

RESULTS

Table 1
Moisture content

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	Moisture content (%)
Root	1.00	0.91	0.09	9%
Leaves	1.00	0.96	0.04	4%
Stem	1.00	0.92	0.08	8%

Table 2
Ash content

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	Ash content (%)
Root	1.000	0.9054	0.0946	9.46%
Leaves	1.000	0.8929	0.1071	10.71%
Stem	1.000	0.9587	0.0413	4.13%

Table 3
Cold water solubility

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	Cold water solubility (%)
Root	1.000	0.76	0.24	24%
Leaves	1.000	0.73	0.27	27%
Stem	1.000	0.79	0.21	21%

Table 4
Hot water solubility

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	Hot water solubility (%)
Root	1.00	0.78	0.22	22%
Leaves	1.00	0.66	0.34	34%
Stem	1.00	0.76	0.24	24%

Table 5
1% NaOH solubility

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	1% NaOH solubility (%)
Root	1.00	0.73	0.27	27%
Leaves	1.00	0.66	0.34	34%
Stem	1.00	0.47	0.53	53%

Table 6
Hot 1% HCl solubility

Sample	Actual wt. of sample taken (g)	Wt. of sample after analysis (g)	Loss of wt. of sample (g)	1% HCl solubility (%)
Root	1.00	0.55	0.45	45%
Leaves	1.00	0.63	0.37	37%
Stem	1.00	0.47	0.53	55%

DISCUSSION

A proximate analysis of root of *milletia auriculata* was studied during the work, it was observed that the root sample contained 9.00% moisture content and only 9.46% ash content. The cold water solubility and hot water solubility of samples showed 24% and 22% result respectively. It is also observed from 1% NaOH solubility and 1% HCl solubility that the result obtained during the study are 27%, 45% respectively. A proximate analysis of leaves of *milletia auriculata* was studied during the work, it was observed that the stem sample contained 4.00% moisture content and only 10.27% ash content. The cold water solubility and hot water solubility of samples showed 27% and 34% result respectively. It is also observed from 1% NaOH solubility and 1% HCl solubility are 27%, 37% respectively. A proximate analysis of the stem of *Milletia auriculata* was studied during the work, it was observed that the stem sample contained 8.00% moisture content and only 4.13% ash content. The cold water solubility and hot water solubility of samples showed 21% and 24% result respectively. It is also observed from 1% NaOH solubility and 1% HCl solubility

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that the result obtained during the study are best i.e., 53%, 55% respectively.

CONCLUSION

This work was carried out to evaluate the proximate analysis of root, stem and leaves of *Milletia Auriculata* plant .This study showed that the studied root, stem and leaves of the plant contained low moisture content. This work has shown that the plant have medicinal values for the management of certain health conditions. The results of solubility have their own importance in pharmaceuticals and medicinal sciences. These results are best for drug transport and drug receptor interactions are controlling force in dilute solutions, which increases drug action and drug effect.

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