



REGULAR ARTICLE

# PHYTOCHEMICAL STUDIES ON *DATURA METEL* LINN. IN MARATHWADA REGION, MAHARASHTRA

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## SUMMARY

During present investigation attempts were made to find out the active phytochemical components. It is felt that, the investigation will enlighten the importance of much neglected species of *Datura* and its taxonomic significance along with its exploitation as a medicinal plant. The quantitative and qualitative analysis is very essential for identifying the compounds present in the medicinal plants. The experiments were carried out in the laboratory using various parts of *D. metel* Linn. such as root, stem, leaves, seeds and fruit coat for quantitative and qualitative analysis.

**Key words:** Phytochemical studies, Marathwada, Maharashtra, *Datura metel* Linn.

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## 1. Introduction

*Datura metel* Linn. belonging to family Solanaceae is distributed world wide, which includes 85 genera and about 2,800 species in the world. There are approximately 25 different species of *Datura* throughout the world, they are often called as *Jimson weed* or '*Thornapple*'. The name *Datura* comes from the early Sanskrit *Dustura* (Mann, 1996) or *dahatura*. Common names of *Datura* are numerous, some of the most common ones being reving nightshade *Thron apple*, *Stink weed*, *Devil's apple*, *Jimson weed* and *angel's trumpet* (Heiser, 1969 & Avery, 1959). The plant *Datura metel* Linn. is distributed through India (Varier's, 1997; Pandey, 2003). It is native to Asia and Africa. Widely cultivated and naturalized in tropic. It occurs throughout India in waste place (Bhattacharjee and Supriya Kumar, 1998). Frequent on waste and along roadsides (Naik *et al* 1998)

*Datura* is one of the most interesting plant with hallucinogenic properties. The whole plant is antiseptic, narcotic, sedative and is useful for asthma (Bhattacharjee and Kumar, 1998) leaves narcotic and antispasmodic (CSIR, 1992). Despite having a

reputation as one of the darker hallucinogens, it has been widely used by society historically in both the old world and the new, and continues to be today for those interested in ethanobotanical uses of this plant worldwide. *Datura* is fascinating topic, while being limited in its uses economically, the alkaloids content of the plant have been demand in the past and its application as a subject for botanical research in vast. It is a genus of contrasts from smelly weeds to lovely ornamentals (Heiser, 1969). Present investigation was carried out for the qualitative and quantitative analysis of *D. metel* Linn.

## 2. Materials and Methods

*D. metel* Linn. was collected from the Marathwada region. It was collected in the polythene bags and brought to the laboratory. They were sort-out in to root, stem, leaf, seeds and fruit coat and were used for preparation of powder. The plant parts were dried in natural condition and after that it was dried in the oven at 60°C up to the constant weight. After the complete drying the plant parts were cut in to small pieces

and ground in to fine powder, and stored in the sealed container. The fine powder of the plant parts were used for the chemical analysis. The plant powder was used for various qualitative and quantitative analysis. In qualitative analysis of alkaloids, tannin, saponins, and iridoids (Gibbs, 1974; Daniel and Sabnis 1979; Dhabe 2003) was done. In quantitative analysis total ash, acid soluble

ash, acid insoluble ash, water soluble ash, water insoluble ash, calcium, phosphorus, sodium, potassium, nitrogen, crude protein, crude fat, crude fiber, gross energy, total sugar, reducing sugar, non reducing sugar, amino acids (Mungikar, 1999), amino nitrogen, phenol, tannin and total alkaloids (Sadashivam and Manickam, 1992) was done.

Table 1. - Quantitative analysis

Plant parts	<i>root</i>	<i>stem</i>	<i>Leaf</i>	<i>seeds</i>	<i>Fruit coat</i>
Total ash%	9.7	14.3	15	5.9	12.3
Water insoluble ash%	7.9	8.4	12.2	2.6	5.2
Water soluble ash%	1.8	5.9	2.8	3.3	7.1
Acid soluble ash%	04.7	10.3	10	01.9	08.3
Acid insoluble ash%	5	4	5	4	4
Water soluble nitrogen%	0.50	0.75	0.05	0.75	1.25
Nitrogen%	2.16	2.33	4.75	2.83	2.75
Calcium%	1.15	0.2	1.13	0.06	0.28
Phosphorus%	0.11	0.13	0.32	0.39	0.23
Potassium%	0.119	0.219	0.195	0.102	0.258
Crude fat%	5.3	3.5	11.5	16.0	4.95
Crude protein%	13.54	14.58	29.68	17.7	17.18
Gross energy (Kcal/gm)	3.12	2.59	2.93	2.89	2.62
Reducing sugar%	0.27	0.15	2.21	2.56	1.16
Total sugar%	0.83	0.62	4.14	5.14	2.77
Non reducing sugar%	0.56	0.47	1.93	2.58	1.61
Crude fiber%	6	3	1	1.7	3
Nitrogen free extract%	65.46	64.62	42.82	43.4	62.57
Total carbohydrate%	71.46	67.62	43.42	60.4	65.57
Total free amino acids%	0.22	0.56	1.76	0.28	0.52
Amino nitrogen%	0.023	0.059	0.18	0.029	0.055
Cellulose%	34.9	33.3	22.0	17.8	34.8
Total Alkaloids%	0.82	0.6	3.64	2.0	1.8
Phenol%	0.09	0.02	0.34	0.18	0.11
Tannins%	0.27	0.18	0.97	0.5	0.48

Table 2. - Qualitative test

Plant parts	<i>Tannins</i>	<i>Saponin</i>	alkaloids	Irredoids
Root	++	+	+	-
Stem	+	++	++	-
Leaf	+++	+++	+++	+
Seeds	+++	+++	+++	+
Fruit coat	+++	++	+	+

### 3. Results and Discussion

Table 1 shows the various phytochemical parameters from the different plant parts of *D. metel* Linn. It is observed that the leaf content more phytochemicals as compared to other plant parts were as it is very less in stem.

The qualitative analysis of the extracts from the root, stem, leaf, seed and fruit coat sample of *Datura metel* Linn. showed the presence of phytochemical constituents such as alkaloids, Tannins, Saponins, and Iridoids during the present investigation on the basis of present investigation it is found that leaf and seed contain more in Tannin, saponin and Alkaloids as compared to other plant parts Iridoids were absent in root and stem (Table-2).

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