

## CHEMICAL ANALYSIS OF MEDICINAL PLANTS *Terminalia tomentosa* AND *Acorus calamus*

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### ABSTRACT

Nitrogen, protein, sugars and vitamins were determined in two medicinal plants, *Terminalia tomentosa* and *Acorus calamus*. Leaves and bark of *T. tomentosa* and leaves and roots of *A. calamus* were taken for chemical analysis. The leaves of *T. tomentosa* contain maximum amount 1.35% and 8.43% nitrogen and protein respectively.

### INTRODUCTION

In continuation of our interest in the chemical analysis of medicinal plants, we collected *T. tomentosa* and *A. calamus* from the hills of Garhwal Himalaya. Some medicinal plants of Shivalik region have been analysed by earlier workers<sup>1-3</sup>.

*T. tomentosa*<sup>4</sup> is a large deciduous straight tree and found throughout the plain of India in Himalayas. The bark has diuretic and cardiotoxic properties. It is useful in ulcer, dysentery, hemorrhage, diarrhoea and leucorrhoea. A decoction of bark is used in ecchymoses, urine wounds and suppurating ears.

*A. calamus*<sup>5</sup> is herb and found in hilly region of Himalayas. The rhizomes has antispasmodic, carminative and anthelmintic properties. It is also used for epilepsy, mental ailments, chronic diarrhoea, bronchial catarrh, intermittent fever and tumours. It is used for kidney and liver troubles.

The present investigation deals with study of chemical analysis of these two medicinal plants in different plant parts.

### EXPERIMENTAL

The plants were collected from the surrounding areas of Kotwar and identified botanically. Leaves and bark of *T. tomentosa* and leaves, roots of *A. calamus* were taken for chemical analysis. The plant parts were separated and dried in oven at 80°C, grounded for chemical investigation.

The chemical analysis of these two medicinal plants were carried out by the procedure as reported earlier<sup>6</sup>. The nitrogen and protein content were determined by Kjeldahl's method<sup>7</sup>. Sugars<sup>8</sup> and Vitamins<sup>9</sup> were identified by analytical and spectrophotometric methods. The results of this study are presented in Table -1.

### RESULTS AND DISCUSSION

Nitrogen, protein, sugars and vitamins were analysed from two medicinal plants. It has been observed that medicinal plant *T. tomentosa* contain highest concentration of nitrogen (1.35%) and protein (8.43%) in leaves. Minimum concentration of nitrogen (0.137%) nitrogen and protein (0.85%) in bark of *T. tomentosa*. *Acorus calamus* contain (0.85%) & (5.31%) nitrogen and protein respectively in leaves and (0.29%) nitrogen, (1.86%) protein were found in root of *A. calamus*. High concentration of protein in leaves of *Terminalia tomentosa* which is very useful in indigenous system of medicine.

Sugar study of these medicinal plants shows that concentration of total sugars was found similar (8.20%) and (8.40%) in *T. tomentosa* and *A. calamus* respectively but reducing sugar was found in low concentration (2.40%) in root of *A. calamus*. The reducing sugar, non-reducing sugar and total sugar were found 2.40%, 3.49% and 5.0% respectively in root of *A. calamus* and leaves of *A. calamus* contain reducing, non-reducing sugar and total sugar 3.03%, 4.37% and 8.40% respectively. The bark of *T. tomentosa*

Table - 1 : Chemical Analysis of Medicinal plants

Plants % of dry matter basis	<i>Acorus calamus</i>		<i>Terminalia tomentosa</i>	
	leaves	Root	Leaves	Root
Nitrogen	0.85	0.29	1.35	0.137
Protein	5.31	1.86	8.43	0.85
Total Sugar	8.40	5.8	8.20	7.00
Reducing sugar	3.03	2.4	3.8	3.20
Non reducing sugar	4.37	3.4	4.4	3.80
Glucose	*	*	**	**
Fructose	*	*	**	*
Raffinose	*	**	-	-
Rhaminose	*	*	**	-
Stachyose	*	-	-	-
Sucrose	*	*	*	*
Vitamin A	*	*	*	*
Vitamin C	1.9	2.1	5	2.2

\*: Not detected; \*\*: In trace amount; -: In moderate amount

contain reducing, non-reducing sugar and total sugar 3.2%, 3.8% and 7.0% respectively.

Total six sugars Stachyose, Raffinose, Glucose, Fructose, Rhaminose & Sucrose were identified in different part of plants. The results are represented in Table. The leaves of *T. tomentosa* contain Raffinose, Fructose & Glucose in trace amount. Glucose was found in trace amount in bark of *T. tomentosa* while all remaining sugars were found in moderate amount, while the root of *A. calamus* contain Raffinose in trace. Chemical

analysis of *T. tomentosa* and *A. calamus* shows that the vitamin 'C' were present in both cases. Vitamin C was found maximum in leaves of *T. tomentosa* and minimum leaves of *A. calamus*. Vitamin A was not detected in both plants.

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