

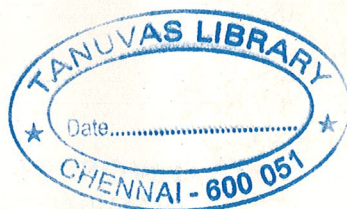
# **CHEMICAL COMPOSITION AND *IN SITU* EVALUATION OF CERTAIN TREE FODDERS OF TAMILNADU**

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*Thesis submitted in  
partial fulfilment of the requirements for the degree of*

**MASTER OF VETERINARY SCIENCE  
in  
ANIMAL NUTRITION**

*to the Tamil Nadu Veterinary and Animal Sciences University, Madras - 7*



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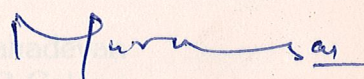


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**CERTIFICATE**

This is to certify that the thesis entitled "**CHEMICAL COMPOSITION AND IN SITU EVALUATION OF CERTAIN TREE FODDERS OF TAMILNADU**" submitted in partial fulfilment of the requirements for the degree of **MASTER OF VETERINARY SCIENCE IN ANIMAL NUTRITION** to the Tamil Nadu Veterinary and Animal Sciences University, Madras is a record of bonafide research work carried out by **Tmt.C VALLI** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

  
(Dr.M.MURUGAN)  
CHAIRMAN

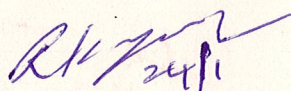
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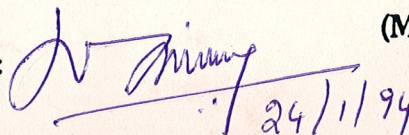
  
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## ABSTRACT

**Title** : CHEMICAL COMPOSITION AND IN SITU EVALUATION OF CERTAIN TREE FODDERS OF TAMILNADU.

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Tree leaves of ten legume species viz *Acacia leucopholea*, *Acacia planifrons*, *Albizia lebbek*, *Bauhinia variegata*, *Dalbergia sissoo*, *Hardwickia binata*, *Leucaena leucocephala*, *Pithecolobium dulce*, *Prosopis cineraria* and *Sesbania grandiflora* and leaves of seven non-legume species viz *Artocarpus heterophyllus*, *Ficus bengalensis*, *Ficus racemosa*, *Ficus religiosa*, *Madhuca longifolia*, *Melia azedarach* and *Thespesia populnea* were analysed for the proximate composition, fibre fractions, major and trace mineral contents, total tannins, and in situ dry matter degradability. Pods of *Acacia leucophloea*, *Acacia planifrons*, *Leucaena leucocephala* and *Sesbania grandiflora* were also analysed for their proximate composition, major and trace mineral contents, total tannins and *in situ* DMD.

There was no variation in the proximate composition among legume or non-legume tree leaves collected either from DP or NDP areas. However CP, EE

and CF were significantly higher in legumes where as NFE and TA were significantly higher in non- legumes ( $P < 0.05$ ). The leaves of *Sesbania grandiflora* among the legumes had high CP content ( $26.38 \pm 2.73$  per cent) and among the non-legumes, *Melia azedarach* contained  $16.47 \pm 0.98$  per cent CP. Irrespective of the area of collection, the legume tree leaves had higher CP than non-legumes. The fibre fractions also did not vary among the legume or non-legume tree leaves collected from DP or NDP areas. The ADF and Lignin were significantly ( $P < 0.05$ ) higher in non-legume tree fodder than in legumes. However the cellulose and hemicellulose content of either legume or non-legume tree leaves did not vary much among themselves. Wide variation in lignin content was observed and it ranged between 6.16 per cent in *Leucaena leucocephala* and 39.30 per cent in *Ficus bengalensis*.

Tree leaves were found to be rich in calcium. The leaves of *Hardwickia binata* contained as high as  $9.75 \pm 1.32$  per cent calcium. However phosphorus content was very poor in tree leaves and the highest phosphorus content was present in *leucaena leucocephala* ( $0.068 \pm 0.003$  per cent).

Concentration of trace minerals other than iron in tree leaves did not vary between legumes and non-legumes. The iron content was significantly ( $P < 0.01$ ) higher in legume tree fodder.

No significant variation could be found in total tannin content of tree leaves collected from DP and NDP areas. The tannic acid content was significantly ( $P < 0.01$ ) higher in legume than non- legume tree fodder. The *in situ* DMD at 48 hours were high in *Albizia lebbek*, *Dalbergia sissoo*, *Leucaena leucocephala*, *Pithecolobium*

*dulce* and *Sesbania grandiflora* among legumes and *Ficus racemosa*, *Ficus religiosa*, *Melia azedarach* and *Thespesia populnea* among non legumes.

A palatability trial of six weeks duration using five adult goats was conducted by cafeteria method feeding the five tree leaves viz *Albizia lebbek*, *Ficus bengalensis*, *Pithecolobium dulce*, *Sesbania grandiflora* and *Thespesia populnea*. The selection of leaves for the trial was based on their local availability, CP, CF, and degradability values. The DMI was highest for *Sesbania grandiflora* ( $103.59 \pm 4.37$  g/Kg W<sup>0.75</sup>) and lowest for *Thespesia populnea* ( $75.14 \pm 2.01$  g/Kg W<sup>0.75</sup>).

Among the pods analysed CP was highest in *Sesbania grandiflora* ( $21.18 \pm 17.89$ ) and CF ( $37.04 \pm 1.63$ ) in *Acacia leucophloea* pods. *Sesbania grandiflora* pods had the highest degradability of  $55.26 \pm 1.26$  at 48 hours incubation.