Asian Resonance

Biochemical Estimation of Protein in the Bark of Anti-Diabetic Plant *Terminalia Arjuna*.

Abstract

The antioxidant property of Terminalia arjuna is the basic principle for its use as an anti-diabetic agent. Ethanolic extract of the bark of Terminalia arjuna was prepared and then was further taken for protein estimation following Bronsted and Lowry method of protein estimation. Upper, Middle, and Inner bark portions were taken and estimated for protein content and it was found that middle portion of the bark possesed more amount of protein. Shade dried bark of the plant was taken and powdered and then further ethanolic extract of the bark was prepared and stored in the dried form which was further used for biochemical estimation. The purpose of study is to find out protein content in the sample.

Aparajita
P.G Department of Botany
T.M Bhagalpur University,
Bhagalpur, Bihar.

Arun K.Singh
P.G Department of Botany
T.M Bhagalpur University,
Bhagalpur, Bihar.

Dharmendra Kumar
Asst Proff,
Deptt of surgery, Jabalpur
Veterinary College,
Madhya Pradesh

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Introduction

Terminalia arjuna is an important medicinal plant, belongs to the family Combretaceae (Jain S et al;2009). T. arjuna is distributed throughout India, Burma and Sri-Lanka(Kirtikar KR et al 1975). It mainly grows along the banks of the river and streams. Terminalia arjuna (TA), commonly known as Arjuna, has been used In Indian system of medicine (ISM) for over three centuries (Muthu C et al; 2006). The thick, white to pinkish gray bark has a long ethnomedicinal history, including cancer treatment; cardioprotective; hypotensive, hypolipidemic and wound healing activity(Yashodharan K et al; 2007). Moreover, it plays a beneficial role in hepatic and renal disorders, and has profound effects on hepatocellular carcinoma in vivo and in vitro (Prushti AB et al; 2007). Hyperphysiological burden of free radicals causes imbalance in homeostatic phenomena between oxidants and antioxidants in the body (Brindha P et al 1981). This imbalance leads to oxidative stress that is being suggested as the root cause of ageing and various human diseases like atherosclerosis, stroke, diabetes, cancer and neurodegenerative diseases.

Materials and Methods:

Preparation of Sample

Different bark samples (upper stem bark, middle bark and inner bark) of Terminalia arjuna were collected from the nursery of Rewa Agricultural college(M.P.) and cut into small pieces. These pieces were shade dried and then further powdered. About half kg of arjuna powder was soaked in one litre of ethanol and kept for 48 hrs in a glass jar with the lid closed. Further with the help of muslin cloth, soaked powder was squeezed and liquid extract was obtained. Then this liquid extract was spread on petri plate and left for water to be evaporated and lastly dried powder was scratched and stored in glass bottle for further use. This process was carried for all the layers.

Estimation of Protein

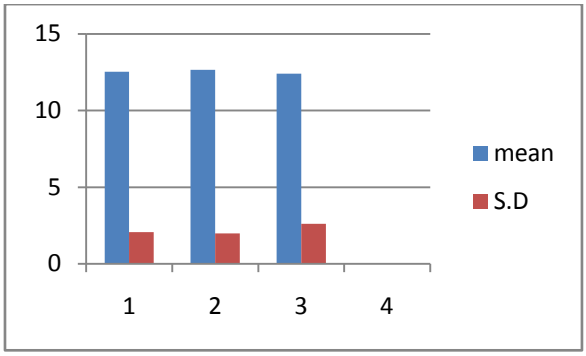
Protein was estimated by Lowry method of protein estimation (1951). As per this method, colour change of the sample solution is in proportion to protein concentration which can be measured using colorimetric techniques. In this case 100 mg arjuna powder was taken and mixed with 10 ml buffer (N/10 Acetic acid and N/10 Sodium acetate). Then it was centrifuged at 2500 rpm and supernatant was collected. About 0.5 ml supernatant was taken and 0.5 ml distill water was added to it, and to this about 5 ml of alkaline solution (NaOH+ Sodium potassium tartarate) and 0.5 ml of folin reagent was added. The optical density was measured at 600 nm.

Result and Discussion

The quantitative biochemical estimation of protein of bark of anti-diabetic and cardiotonic *Terminalia arjuna* conducted and results are as given in the table below. As table reveals that amount of protein is highest in the middle bark area which is in the range 12.66±1.98.

Quantitative estimation of protein in the bark of *Terminalia arjuna*

S No	Plant taken	Parameter	Upper bark (µg/mg)	Middle bark (µg/mg)	Inner bark (µg/mg)
1	Terminalia arjuna	protein	12.53 ±2.06	12.66 ±1.98	12.4 ±2.61



A chart representing mean (µg/mg) and S.D from the mean of protein content in1) upper bark 2) middle bark and 3) inner bark of *Terminalia arjuna.*

Conclusion

The present evaluation of biochemical parameter protein will be helpful while standardizing the drug for its various pharmacological potentials such as its use as anti-diabetic agent and to check the adulteration in natural valuable drug at the time of consumption for desired pharmacological effect.

References

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