

## **SUMMARY OF FINAL REPORT**

of

**Major Research Project of UGC, New Delhi**

[F.N. 41-757/2012 (SR), Dated: 25/07/2012]

**In Pharmacy** entitled

“Identification and Evaluation of Some Promising Anti-Diabetic Plants from Tribal-Rich Pockets of Orissa”

Diabetes mellitus is a heterogenous metabolic disorder characterized by hyperglycaemia resulting from defective insulin secretion, resistance to insulin action or both. At present, several drugs are used orally in the management of diabetes, but still they lack in the complete recovery as well as possess untoward effects. However, the therapeutic approach of several traditional medicinal systems appears to be more holistic. The medicinal preparations in traditional medicines contain a variety of ingredients chiefly of plant origin, which are thought to act on a variety of targets by various modes and mechanisms. Although there is a great deal of contribution of plants for the treatment of diabetes, very few plants have really come in practical and proper uses. The potential for new plant products is not exhausted and there exists a tremendous scope for search of newer antidiabetic agents from indigenous flora.

In developing countries like India, about 75% of people are still dependent upon local bio-wealth to cure their diseases through crude drugs and strong magico-religious beliefs. Tribal people are the repository of accumulated experience and knowledge of indigenous flora and fauna. Living close to nature, they are familiar with thousands of wild plants. By empirical reasoning and trial and error, tribes have screened and developed a highly complex and very specific knowledge of local flora. There is an urgent need for launching a research programme on medicinal plant resources in the tribal and other backward areas which are becoming scarce as a result of their ruthless and unplanned management. It is, therefore, important that before oral knowledge system on plants is lost forever, it must be preserved and properly documented. So, there has been a spurt of interest over the years in ethnobotanical studies, mainly because of the search for potentially new medicines and economically relevant plants and the need for conservation and utilization of plant resources found in tribal areas for socio-economic development.

The objective of the present investigation is to tap the valuable knowledge of the tribal communities of Odisha on the medicinal plants used against diabetes and related health problems before they are lost since Odisha is one of the notable cradles of tribal people, where as many as 62 categories have been identified. The project is also aimed at phytochemical investigation and pharmacological evaluation of some selected plant species having pertinent tribal claim for antidiabetic activity.


Folklore survey, collection, identification, preservation and documentation of plants used by tribes or hill people of tribal rich districts of Odisha in the treatment of diabetes and associated problems were carried out. Out of the plant species identified, few were selected for phytochemical and pharmacological studies based on ethnic survey. The selected plant materials were extracted with various solvents and subjected to preliminary phytochemical analysis for identification of phytoconstituents. The antidiabetic screening of the extracts was carried out


using different experimental models. Chromatographic separation of selected extracts showing promising antidiabetic potential was carried out. The resulting fractions were further subjected to antidiabetic screening and the activity of the fractions was compared with that of the parent extracts. The extracts / fractions showing promising antidiabetic activity were subjected to subacute toxicity study in order to access the safety profile.

After field survey, thirty two promising plant species were identified from the tribal-rich pockets of Dhenkanal, Angul and Sambalpur districts of Odisha having folklore claim for antidiabetic activity. The extracts of five selected plants viz., *Oxalis corniculata* Linn., *Naringi crenulata* (Roxb.) Nicolson, *Toddalia asiatica* (L.) Lam., *Clerodendrum inerme* (L.) Gaertn and *Clerodendrum viscosum*, vent, showed various degree of antihyperglycaemic effect in different experimental models, among which methanol extract exhibited highest activity. Antidiabetic screening of various fractions of methanol extract of selected plants also revealed promising activity. The activity of some of the fractions was even higher in comparison to their respective methanol extract at the same dose level, which suggests that the active constituents are probably concentrated in these fractions. The antidiabetic activity observed is in parallel with the ethnic claim of the plant species investigated and holds promise for development of potent therapeutic agents for the management of diabetes. The implementation of the project has lead to the identification, documentation and preservation of promising antidiabetic plants from tribal rich districts of Odisha and evaluation of antidiabetic activity of selected plant species.

  
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(Sagar Kumar Mishra)  
M.Pharm. (Pharmacognosy), Ph.D.  
**PRINCIPAL INVESTIGATOR**  
University Department of Pharmaceutical Sciences  
Utkal University, Vani Vihar,  
Bhubaneswar, Odisha  
**Principal Investigator**  
**UGC Major Research Project**

  
(Kunja Bihari Satapathy)  
M.Sc., M.Phil., Ph.D., D.Sc. (Botany)  
**CO-INVESTIGATOR**  
P.G. Department of Botany  
Utkal University, Vani Vihar,  
Bhubaneswar, Odisha  
**Co-Principal Investigator**  
**UGC-Major Research Project**

  
(Sabuj Sahoo)  
M.Tech. (Biotechnology), Ph.D.  
**CO-INVESTIGATOR**  
P.G. Department of Biotechnology  
Utkal University, Vani Vihar,  
Bhubaneswar, Odisha  
**Co-Principal Investigator**  
**UGC-Major Research Project**