

- 1. Title of research project:** Evaluation of toxic materials in herbal medicine using analytical techniques.
- 2. Name of PI:** Ms. Savita S. Yadav
- 3. Funding Agency:** University Grants Commission
- 4. Project Reference number/ File number:** 47-1521/10 (WRO) dated 7th October, 2010
- 5. Executive summary of the project along with output:**

Executive Summary Report

Project has been completed successfully and summary of findings are as follows:

1. 'Laksha Guggulu' was taken for the study. Heavy metals and specific micro-organism analysis and organochlorine pesticides residues of different metabolites of DDT, DDE, isomers of HCH (α , β , δ, γ) were carried out according to reference procedure and Ayurvedic Pharmacopoeia by using analytical techniques.
2. Presence of six heavy metals namely Arsenic (As), Lead (Pb), Cadmium (Cd), Nickel (Ni), Mercury (Hg) and Chromium (Cr) were checked in these samples and the results was below detection limit (WHO permissible limit i.e. 10 mg/kg).
3. For specified micro-organism: *Escherichia coli* and *Pseudomonas aeruginosa* were taken as specified micro-organism. All the test samples were prepared in nutrient broth and fluid soyabean-casein digest medium.
4. The absence of acid and gas and of indole in the primary and secondary test indicates the absence of *Escherichia coli*. Upon examination the streaked surfaces under ultra-violet light no development of a green colour of the colonies; the sample meets the requirement of the test for the absence of *Pseudomonas aeruginosa*.
5. Determine the organochlorine pesticides residues of different metabolites of DDT, DDE, isomers of HCH (α , β , δ, γ) from *Laccifera Lacca*, *Withania Somnifera*, *Terminalia Arjuna*, *Cissus Quadrangularis*, *Commiphora Wightii* and *Sida Veronicaefolia*.

6. DDT and DDE were not detected in most of the samples. However, presence of α -HCH and γ -HCH, the main constituents of commercial HCH was detected in 95% samples. This indicates that residual build up is more of HCH in plant samples analysed as compare to DDT.
7. It has been concluded from this study that estimation of heavy metals, microbial contamination and pesticides is highly essential for raw drugs or plant parts used for the preparation of compound formulation drugs.

Output of the project:

1. One research paper communicated for publication in international journal.
2. Presented the work at one international conference.