Scope and Objective of the Present Investigation
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Fruit and root of *S. xantocarpum* and rhizome of *P. kurroa* are the two plants which are known for their medicinal property since the ancient time. Antimicrobials and antidiabetic property of these two plants both *in vitro* and *in vivo* have been done on the ATCC culture and repository lacunae in the Antimicrobials and antidiabetic property clinical pathogenic isolates, which is the base for undertaking the present research programme.

- Synergetic effect between these two undertaken plants was studied both *in vitro* and *in vivo*.
- Any plant extracts (aqueous and solvents) which contains its non volatile and solvent soluble is checked against the clinical isolates.
- The outcome may help in formulating the specific beneficiary product which may help the society as a dietary supplement.
- The present investigation was positively made possible to extend that the outcome of *in vitro* of these plant solvent extracts to animal model (rat).
- Kidney, liver and pancreas were tested with the positive outcome of *in vitro* studies (Histopathological) have maintained the architecture of the specific tissues which were supposed to be disorganized after the diabetes induction.

The study was carried out with the fruit and root of *S. xantocarpum* and rhizome of *P. kurroa* to investigate the antimicrobial and antidiabetic properties against the clinical isolates of diabetic foot ulcer with the following objectives

- Enumeration of bacteria and fungi associated with soft tissue infection in diabetic patients.
- Evaluation of *in vitro* Picrorhiza kurroa (rhizome) and Solanum xantocarpum (root and fruit) extracts for antimicrobial properties against bacteria and fungi.
- *In vivo* evaluation of effective plant extracts on antidiabetic properties in streptozotocin- induced diabetic rats.
- Histopathological studies of plant extract treated and control diabetic rats.
The objectives have been presented in 4 chapters:

1. Enumeration of bacteria and fungi associated with soft tissue infection in diabetic patients.

2. Evaluation of *in vitro* *Picrorhiza kurroa* (root) and *Solanum xanthocarpum* (root and fruit) extracts for antibacterial properties against bacteria and fungi.

3. *In vivo* evaluation of effective plant extracts on antidiabetic properties in streptozotocin-induced diabetic rats.

4. Histopathological studies of plant extract treated and control diabetic rats

**Need for the study**

Diabetic mellitus is a metabolic disorder which is increasing since it is being recognized. Several factors play a major role in the onset of the disorder. As mentioned earlier the stress, obesity, physiological and metabolic malfunctioning of the organ system and decrease of physical activity due to the life style are the causes for the disorder. This leads to many complications in the human organ system and also become prone to various opportunists and also pathogenic parasitic forms, finally suffering from the infection; where synthetic drugs have posed the inefficiency along with MRD have made many researchers to think of the traditional available plant source for the effective treatment without any side effects.

In the present research program, two such plant materials *S. xanthocarpum* and *P. kurroa* were checked for its efficiency in inhibiting the diabetic foot ulcer colonized microbes (*E. coli, Proteus, Klebsiella, Enterobacter, Pseudomonas, S. aureus*), antidiabetic and antioxidant properties. The plant extracts were also combined and researched for its synergistic activity in antidiabetic studies which was extrapolated in histopathology. This was found lacking specially with these combinations *S. xanthocarpum* (fruit and root) and *P. Kurroa* (rhizome) in the field of research. This poses an essential part and may be the source for its exploitation in the field of Ayurveda for the treatment of this important disorder. Hence with this backdrop the present investigation in the above mentioned are taken up and the objectives are as follows.