

## Standardization and metabonomics studies of hydro-ethanolic extract of Piper betel root in nanoparticles

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A significant amount of root of *Piper betel* (PBR) is produced as a wasted by product in betel vine industry. PBR contains a number of potent bio-molecules that have potential bioactivities including contraceptive potency. The hydro-ethanolic extract of PBR is standardized with a validated HPTLC method. The content of diosgenin and ursolic acid are found to be 0.08 and 0.05% (w/w) respectively in the preparation. The extract of PBR loaded in hydroxypropyl-beta-cyclodextrin (HPBCD) nanoparticles ameliorates serum biochemical profile, enhance bioavailability and stability. A detailed <sup>1</sup>H NMR serum metabonomics analyses are carried out to assess the chronic toxicity profile in cyclic female rats. Ethnomedicinal formulation of PBR significantly lowers HDL cholesterol (10.8%,  $p = 0.03$ ) than the control group. But no significant difference ( $p > 0.5$ ) in LDL, VLDL, HDL and total cholesterol is observed between the control and PBR loaded HPBCD nanoparticle treated group. PCA score plots show overlapping scores in control and treated rats. PLS approach and histological studies of uterus and ovary failed to separate two groups, after discontinuation of treatment. The data suggests that the hydro-ethanolic extract of PBR in nanoparticles exert potent contraceptive potential with a high safety-risk ratio.

### Biography

Mr. Plaban Bhattacharya did his M. Pharm. from Jadavpur University and presently pursuing Ph.D. work as Senior Research Fellow of CSIR, New Delhi. His supervisor Dr. Achintya Saha, Associate Professor in the Department of Chemical Technology, University of Calcutta is working in analytical method development including metabonomics and toxicity studies. He has published more than 60 papers in reputed journals.