

Phytochemical investigations and pharmacological evaluation of the different bioactive fractions obtained from the leaves of *Mussaenda erythrophylla* and *Datura metel* Linn. and biodistribution studies of fluorescent based phospholipid vesicles of their extract

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Mussaenda erythrophylla and *Datura metel* are distinguished as herbal medicinal as well as ornamental plant, grown in western tropical Africa, and India respectively. In order to investigate and validate the traditional folk medicinal value, the plants leaf was extracted through cold maceration process using the solvents like acetone-water, ethanol –water and subsequent extracts were separated into three different fractions (ME1-3) and (DM1-3) through column chromatography and their photochemical analysis were carried out by TLC and chemical tests. The results showed that steroid, terpenoid, alkaloid and flavonoid were present in the crude extracts of the plants and documented by TLC spraying reagents. The *in vitro* anti-arthritis activity was evaluated by all fractions derived from two plant extracts by proteinase inhibition and denaturation assay and indicated that fractions ME1 DM1 were found to be effective to protect *in vitro* arthritis in above two models by showing IC₅₀ 22, 10.4 and 9.5 µg/ml and 25, 11 and 8.6 µg/ml respectively. Anti-arthritis activity was further validated by *in vivo* analgesic activity in hot plate model, where DM1 displayed 90% protection of heat induced pain in contrast to untreated controls in swiss albino mice model. Furthermore oral administration of the acetone-water extract at a dose of 200 mg/kg (ME) and 150 mg/kg (DM) on streptozotocin induced diabetic rats for 14 days showed a significant lowering ($p < 0.05$) of final blood glucose level compared to the pretreatment level. To investigate the proper organ distribution of plant extract, life animal imaging was carried out with phospholipid based FITC tagged phytoextract and result demonstrated that DM1 and ME1 fractions were accumulated in mice ankle joint cartilage, and gastrointestinal tract and pancreas. Our phytopharmacological studies is exploring that DM and ME bioactive fractions could be used for the management of arthritis and related pain and diabetes as an herbal drug.