ABSTRACT

Oxidative stress is involved in the pathogenesis of several disorders including gastrointestinal inflammation and ulcers. Natural antioxidants are known to scavenge the causative free radicals in such chronic inflammatory conditions.

*Mallotus philippensis* and *Rhodomyrtus tomentosa* are medicinal plants, used traditionally for treating conditions like abdominal pain and ulcers. Phytochemical analysis revealed the presence of terpenoids, flavonoids, tannins, saponins, and steroids in the leaf extractives of both the plants. Hence, the present research was aimed to study the potential antioxidant and anti ulcer activities of the various extractives of *Mallotus philippensis* and *Rhodomyrtus tomentosa* using both *in vitro* and *in vivo* models to scientifically validate the folkloric use of these medicinal plants.

*In vitro* antioxidant potential of the successive extractives of both the plants was studied by five different methods. Anti ulcerogeneric activity of all the extractives was studied in albino rats by ethanol induced gastric mucosal damage at two dose levels (100 and 200 mg/kg *b.w*). The aqueous alcoholic extractives of *Rhodomyrtus tomentosa* (RTLE) and the methanolic extractives of *Mallotus philippensis* (MEMP) exhibited potent antioxidant and anti ulcer activity in the model studied. Hence these extractives were selected for anti ulcer studies by acute aspirin plus pyloric ligation, forced
swimming stress ulcer and chronic acetic acid induced ulcer models. The results indicated that the selected extractives exhibited anti ulcerogenic activity by both antisecretory and cytoprotective actions. Histopathological studies of the gastric mucosa further supported the study.

HPTLC studies, using betulin as marker compound, revealed the presence of betulin in MEMP, which accounts for the antioxidant activity of the extractives.

RTLE exhibited significant anti ulcer activity in comparison to the other extractives. Hence, the constituents of RTLE were separated by column chromatography and subjected to spectral characterisation using FT-IR, LC-MS, $^1$H-NMR and $^{13}$C-NMR studies. The isolated compounds were characterised as 7-hydroxy coumarin (umbelliferone), Psoralene and 8-hydroxy psoralene (xanthotoxin) which are reported to possess antioxidant properties.

GC-MS studies of RTLE revealed the presence of volatile antioxidant phytoconstituents like phytol, hexadecanoic acid and squalene.

Flavonoids or terpenoids present in the extractives may have contributed to the antioxidant and anti ulcer activity by mechanisms involving both, mucosal offensive and defensive factors.