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Use of Amaranthus Roxburghianus Root Extract in the Treatment of Ulcerative Colitis in Mice

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Abstract : The present work was undertaken to determine the effects of Amaranthus roxburghianus Nevski. (Amaranthaceae) root alone and in combination with piperine in treating ulcerative colitis (UC) in mice. Swiss albino mice were divided into seven groups (n = 6). Standard group received prednisolone (5 mg/kg, i.p.). Treatment groups received hydroalcoholic extract of roots of A. roxburghianus (50 and 100 mg/kg, p.o.) and a combination of hydroalcoholic extract of roots of A. roxburghianus (50 and 100 mg/kg, p.o.) and piperine (5 mg/kg, p.o.). Ulcer index, colitis severity, myeloperoxidase (MPO), malondialdehyde and glutathione were estimated from blood and tissue. Column chromatography of the extract was done and purified fractions were analyzed by gas chromatography-mass spectroscopy (GC-MS). Treatment with the combination of hydroalcoholic extract of A. roxburghianus and piperine showed minimal ulceration, hemorrhage, necrosis and leucocyte infiltration by histopathological observation. Acetic acid increased MPO levels in blood and colon tissue to 355 U/mL and 385 U/mg, respectively. The combination of hydroalcoholic extract (100 mg/kg) and piperine (5 mg/kg) significantly decreased MPO in blood and tissue to 182 U/mL and 193 U/mg, respectively. Similarly, this combination significantly reduced MPO and increased glutathione levels in blood and tissue. Various phytoconstituents were detected by GC-MS. The combination of hydroalcoholic extract and piperine is effective in the treatment of UC and the effects are comparable with the standard drug prednisolone. 4H-pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl, eugenol and benzene, and 1-(1,5-dimethyl-4-hexenyl)-4-methyl are reported having analgesic, anti-inflammatory, and antioxidant properties; they may play a role in the biological activity of A. roxburghianus root.

Keywords : Amaranthus roxburghianus, ulcerative colitis, anti-inflammatory, ulcerative colitis
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