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Vasomodulatory effects and mass spectral analysis of *Bridelia ferruginea* Benth.

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Bridelia ferruginea Benth. (Fam. 'Euphorbiaceae) is known to possess potent anti-inflammatory activity. Here, we investigated its vasomodulatory effect, as anti-inflammatory therapy that beneficially impact the cardiovascular system. Extracts (Bf1, Bf-HA) and fraction (Bf2) of *B. ferruginea* (Bf), were prepared from the bark of Bf to study their vasomodulatory effect using rat aortic rings. The vasorelaxant effect of Bf1 and Bf2 was mediated by the activation of nitric oxide synthase/endothelial isoform (NOS3) as confirmed by EA.hy926 endothelial cells, real-time PCR and Western blotting. Mass spectral analysis of these extracts and fraction was performed to understand the profile of compounds present in them. Mass spectral analysis showed the presence of similar ions in both Bf1 and Bf2 while Bf-HA showed different patterns. Vasorelaxant effect of Bf1 and Bf2 in phenylephrine (PE) pre-contracted endothelium intact aortic rings was blocked significantly in the presence of both *N*-nitro-L-arginine methyl ester (L-NAME) or soluble guanylate cyclase inhibitor (1*H*-[1,2,4]oxadiazolo-[4,3-*a*]quinoxalin-1-one [ODQ]). However, cyclo-oxygenase (COX) inhibitor (indomethacin) did not exert any change. In contrast, Bf-HA significantly inhibited ACh-induced vasorelaxation, but had no effect on sodium nitroprusside (SNP)-mediated relaxation, thereby suggesting NOS inhibitory activity in the extract. Studies with Bf1 and Bf2 on EA.hy926 cells demonstrated NOS3 mediated nitric oxide (NO) generation. Purified fractions of Bf thus possess vasorelaxant compounds, which remain to be identified.

Keywords: Endothelium, Mass spectroscopy, Nitric oxide, Traditional medicine, Vasoreactivity