



Effects of diphenhydramine and famotidine on lipid peroxidation and activities of antioxidant enzymes in different rat tissues

Mila Kesiova, Albena Alexandrova, Neli Yordanova, Margarita Kirkova, Simeon Todorov

Institute of Physiology, Bulgarian Academy of Sciences, Acad. G.Bonchev Str., Bild. 23, 1113 Sofia, Bulgaria

Correspondence: Albena Alexandrova, e-mail: a_alexandrova_bas@yahoo.com

Abstract:

The potential antioxidant activity of diphenhydramine (histamine H₁-receptor antagonist) and famotidine (histamine H₂-receptor antagonist) was studied. Diphenhydramine inhibited the spontaneous, Fe(II)-induced and Fe(II)/ascorbate-induced lipid peroxidation, while famotidine showed a biphasic concentration-dependent effect on spontaneous lipid peroxidation (a stimulation by 1mM and an inhibition by 5mM) and increased Fe(II)-induced- and inhibited Fe(II)/ascorbate-induced lipid peroxidation in the rat liver and brain. Both drugs decreased 'OH-provoked deoxyribose degradation in Fenton-type systems and inhibited O₂⁻-provoked reduction of nitro-blue tetrazolium and ferricytochrome C, but famotidine effect was stronger than that of diphenhydramine. The significant famotidine-induced inhibition of nitro-blue tetrazolium reduction might be underlain by the stimulation of superoxide dismutase activity. Famotidine and diphenhydramine did not alter the catalase activity in all tissue preparations, except for its concentration of 5mM (a complete inhibition). The present results suggest a beneficial effect of histamine H₁ and H₂-blockers, especially famotidine, as antioxidants and/or metal chelators, which might be an additional explanation of their therapeutic action.

Key words:

diphenhydramine, famotidine, oxygen free radicals, lipid peroxidation, antioxidant enzymes
