Bismuth increases hydroxyl radical-scavenging activity of histamine H2-receptor antagonists

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Abstract:
The effects of histamine H2-receptor antagonists, alone or in a combination with bismuth, on *OH-provoked degradation of deoxyribose were studied. The histamine H2-receptor antagonists (cimetidine, ranitidine and roxatidine), themselves decreased the deoxyribose damage in Fenton-type systems. In combinations with bismuth, their inhibitory effect in Fenton system (Fe(III)/ascorbic acid + H2O2) was stronger. Moreover, unlike Fe(III) and Cu(II), which in the presence of ascorbic acid + H2O2 led to an increase in the *OH formation (deoxyribose damage), Bi(III) showed an opposite effect. The present results are interpreted in view of a better *OH scavenging activity of bismuth complexes of histamine H2-receptor antagonists as compared to that of the corresponding drugs. These findings might be one more explanation why bismuth salts, in combination with acid-reducing agents, are more effective anti-ulcer agents.

Key words:
*OH radicals, bismuth, histamine H2-receptor antagonists, bismuth/drug complexes