Streszczenie w języku angielskim

H1 receptor antagonists are widely used in the treatment of allergies. Histamine H2 receptor antagonists are a group of drugs that inhibit gastric juice secretion in gastrointestinal diseases. However, recent research has shown suggest that H1 and H2 blockers may have a broader spectrum of activity, including hypoglycemic effects. The antioxidant properties of H1 and H2 blockers have not been fully elucidated, and their antiglycation potential has not been studied to date. Therefore, the aim of this study was to evaluate the antiglycation activity (antiglycoxidant activity) of twelve H1 receptor antagonists (diphenhydramine, antazoline, promethazine, ketotifen, clemastine, pheniramine, cetirizine, levocetirizine, bilastine, fexofenadine, desloratadine, and loratadine) and the most popular H2 receptor antagonists (ranitidine, cimetidine, and famotidine). Bovine serum albumin (BSA) was glycated with sugars (glucose, fructose, galactose, and ribose) and aldehydes (glyoxal and methylglyoxal) in the presence of H1 and H2 blockers. In the analyzed group of drugs, ranitidine was the only H2 blocker that significantly inhibited BSA glycation in all tested models. The content of protein carbonyls (carbonyl groups), protein glycoxidation products (↓dityrosine, ↓N-formylkynurenine), and early- (↓Amadori products) and late-stage (↓advanced glycation end products, AGEs) protein glycation products (biomarkers) decreased significantly in samples of glycated BSA with the addition of ranitidine relative to BSA with the addition of the glycating agents. The antiglycation potential of ranitidine was comparable to that of aminoguanidine and Trolox. The other tested substances did not induce a significant decrease in the content of albumin glycation and oxidation end-products, and the inhibition rate of glycoxidation was not influenced by the chemical structure or generation of H1 blockers. None of the tested H1 receptor antagonists exhibited strong antiglycation activity. Further research, including both in vitro and in vivo models, is needed to elucidate the mechanisms of hypoglycemic activity of H1 and H2 antihistamines.