

The clinical relevance of advanced glycation endproducts (AGE) and recent developments in pharmaceuticals to reduce AGE accumulation.

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Advanced glycation endproducts (AGE) are a class of compounds resulting from glycation and oxidation of proteins, lipids or nucleic acids. Glycation is the non-enzymatic addition or insertion of saccharide derivatives to these molecules. This leads to the formation of intermediary Schiff bases and Amadori products and finally to irreversible AGE. This classical view has been modified in recent years with recognition of the importance of oxidative and carbonyl stress in endogenous AGE formation. AGE may also have exogenous sources, in certain foods and tobacco smoke. A whole class of specific and non-specific receptors binding AGE has been characterized. Apart from cross-linking of proteins by AGE, the effects of receptor stimulation contribute to the development of chronic complications of conditions like diabetes mellitus, renal failure, and atherosclerosis. Possible interventions to reduce the effects of AGE accumulation include AGE formation inhibitors or breakers, or receptor blockers, but possibly also dietary interventions. Some of the problems with current assay or diagnostic techniques, and several unresolved issues on the role of AGE in disease will be discussed. Our review will focus on the clinical and pharmaceutical implications of these developments.

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