

Identification of peptides inhibiting the specific binding between AGEs and RAGE

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Advanced glycation end products (AGEs), produced by non-enzymatic glycation between sugar (or its metabolites) and the amino residues on biomolecules, exert the inflammatory response via the stimulation of some pattern recognition receptors including RAGE. AGEs are known to increase in various age-related diseases, suggesting their involvement in chronic inflammation and tissue remodeling. Therefore, it is likely that the regulation of AGEs signaling will be the potent therapeutic target for prevention and treatment of age-related diseases. Previously, we purified the AGEs-binding factor using affinity gel with AGEs as specific ligand. In this study, we analyzed its properties, and tried to identify the peptides antagonizing the AGEs-RAGE binding. By in vitro AGEs-RAGE binding assay, AGEs-affinity chromatography and MALDI-TOF mass analysis, AGEs-binding factor with molecular mass of 70 kD was isolated. This factor inhibited AGEs-RAGE binding in concentration-dependent manner, and it was revealed that the inhibitory region existed near the N-terminus by the analysis using overlapping-peptides. Additionally, two minimal peptides exhibiting the inhibitory activity were identified. These findings suggested that AGEs-binding factor and its derived inhibitory peptides will have the potential usefulness for regulating chronic inflammation and tissue remodeling.