

United States Patent [19]

Ulrich et al.

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- [54] **INHIBITORS OF NONENZYMATIC CROSS-LINKING**
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Related U.S. Application Data

- [63] Continuation-in-part of Ser. No. 798,032, Nov. 14, 1985, Pat. No. 4,758,583, which is a continuation-in-part of Ser. No. 590,820, Mar. 19, 1984, Pat. No. 4,665,192.
- [51] Int. Cl.⁴ C07D 239/02; C07D 403/30
- [52] U.S. Cl. 540/553; 544/330; 548/315; 548/347
- [58] Field of Search 548/315, 347; 544/330; 540/553

- [56] **References Cited**
U.S. PATENT DOCUMENTS
3,081,222 3/1963 Hageman et al. 548/315
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[57] **ABSTRACT**

The present invention relates to compositions and methods for inhibiting nonenzymatic cross-linking (protein aging). Accordingly, a composition is disclosed which comprises an agent capable of inhibiting the formation of advanced glycosylation endproducts of target proteins by reacting with the carbonyl moiety of the early glycosylation product of such target proteins formed by their initial glycosylation. Suitable agents contain an active nitrogen-containing group, such as a hydrazine group. Particular agents comprise aminoguanidine derivatives. The method comprises contacting the target protein with the composition. Both industrial and therapeutic applications for the invention are envisioned, as food spoilage and animal protein aging can be treated.

4 Claims, No Drawings