

[54] SYNTHESIS OF CROSS-LINKS IN THE HELICAL DOMAIN OF COLLAGEN USING PYRIDOXAL 5-PHOSPHATE AND COPPER OR IRON

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[58] Field of Search 260/123.7, 113, 115; 435/69, 273

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[57] ABSTRACT

Aldehyde cross-link intermediates and cross-links are generated in the central helical portion of collagen by incubating collagen with pyridoxal-5-phosphate and either cupric copper ion or ferrous iron ion. The cross-links are chemically similar to natural cross-links found in the non-helical regions and are directly between amino-acid moieties naturally occurring in the central helical portion of collagen. Cross-linking and utilization of aldehyde intermediates occurs when the product is reincubated after pyridoxal is removed. Alternatively maintaining the product at body temperatures will promote cross-linking. The cross-linked collagen product has increased resistance to enzyme degradation.

18 Claims, 6 Drawing Figures