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Gerard M. Turino, Shuren Ma, Yong Y. Lin, Jerome O. Cantor

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# THE THERAPEUTIC POTENTIAL OF HYALURONAN IN COPD

Gerard M. Turino[1,2], Shuren Ma[1,2], Yong Y. Lin[1,2], and Jerome O. Cantor[3]
[1]Mt. Sinai-St. Luke's-Roosevelt Hospital, New York, New York; [2]Mt. Sinai Icahn School of Medicine, New York, New York; and [3]St. John's University College of Pharmacy and Health Sciences, New York, New York

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## Abstract

Insights into the clinical course in COPD indicate the need for new therapies in COPD. The discovery of alpha-1 antitrypsin deficiency (AATD) led to the protease-antiprotease imbalance hypothesis which was applied to COPD related and not related to AATD. The discovery of AATD brought recognition to the importance of elastin fibers in maintaining lung matrix structure. Two cross-linking amino acids are unique to mature elastin, desmosine and isodesmosine (DI), which can serve as biomarkers of the degradation of elastin. The RAPID study shows a correlation of an anatomical index of COPD (computed tomography) correlating with a chemical indicator of matrix injury in COPD, (DI). The results suggest that preservation of lung elastin structure may slow progression of COPD. Hyaluronan aerosol decreases severity of elastase induced emphysema in animals and induced reductions in (DI) in preliminary human studies. Hyaluronan deserves further development as a therapy in COPD.

## INTRODUCTION

Recent reports , added to past insights into the clinical course in COPD, indicate the need for new therapies in COPD.[1, 2] The discovery of alpha-1 antitrypsin deficiency (AATD)[3] led to the protease-antiprotease imbalance hypothesis which was applied to COPD related and not related to AATD,[4] the latter involving smoke-related loss of inhibitory capacity of alpha-1 protein for elastases.[5] The discovery of AATD brought recognition to the importance of elastin fibers in maintaining lung matrix structure.[6] Recognition of elastin as a vulnerable structural component in COPD and early insights into the chemical structure of elastin led to the investigation of two cross-linking amino acids which are unique to mature elastin, desmosine and isodesmosine (DI), which can serve as biomarkers of the degradation of elastin in the body