

Excessive Recruitment of Neutrophils and Elastase Release in Emphysema and COPD; Effect of Natural Protease Inhibitors

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Abstract : Excessive recruitment of Neutrophils into the lungs is a hallmark of several chronic inflammatory disorders such as emphysema and COPD. The resulting of this recruitment is the pathogenesis of lungs which is characterized by an imbalance between leukocyte serine proteinases mainly neutrophil elastase and the physiological inhibitors. The development of emphysema and remodeling of airway tissue occurred when neutrophil migrate into the lungs with more release of elastase and other proteolytic enzymes. Many reports have demonstrated that the extracts from medicinal plants such as *Nigella sativa* (L.) seeds extracts have anti-elastase activity; this is mainly due to the enrichment of the extracts with many bioactive molecules mainly phenolic compounds. Neutrophil serine proteases including human neutrophil elastase are involved in many inflammatory diseases, such as chronic obstructive pulmonary disease and emphysema. Since the current therapies for these diseases are inadequate and have numerous adverse effects, there is an acute need of potential alternative therapies. The natural protease inhibitors have received increasing attention as useful tools for potential utilization in pharmacology. This work is elucidating the most important natural phenolic substances that have been reported recently for their effectiveness as natural anti-elastase molecules, and hence, to the possibility of their use in the field of pharmaceuticals.

Keywords : medicinal plants, phenols, elastase, anti-elastase, chronic obstructive pulmonary disease, COPD, emphysema

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