Elastase Release by Stimulated Neutrophils Inhibited by Flavonoids: Importance of the Catechol Group

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Pathogenesis of chronic inflammatory diseases is associated with excessive elastase release through neutrophil degranulation. In the present study, inhibition of human neutrophil degranulation by four flavonoids (myricetin, quercetin, kaempferol, galangin) was evaluated by using released elastase as a biomarker. Inhibitory potency was observed in the following order: quercetin > myricetin > kaempferol = galangin. Quercetin, the most potent inhibitor of elastase release also had a weak inhibitory effect on the enzyme catalytic activity. Furthermore, the observed effects were highly dependent on the presence of a catechol group at the flavonoid B-ring. The results of the present study suggest that quercetin may be a promising therapeutic agent in the treatment of neutrophil-dependent inflammatory diseases.

Key words: Neutrophil, Flavonoids, Elastase, Structure-Activity Relationship