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## Effect of Different Organic Acids and their Enantiomers on Proteolytic Property of Soil

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### ABSTRACT

*Proteases constitute the major biochemical machinery of soil in nitrogen mineralization and degradation of biochemical inputs from various resources. It has been widely studied that proteases are stimulated or inhibited by variety of these anthropogenic inputs and their derivatives to the soil which in turn affect various cycles. We tested ten organic acids viz. 4-hydroxybenzoic acid, ferulic acid, adipic acid, phthallic acid,  $\alpha$ -amino butyric acid, L-ornithin, L-citrulin,  $\beta$ -alanin, L-tartaric acid, D-tartaric acid in eight soils of two different locations in the Czech Republic, and the concentration range naturally observed in rhizospheric soil ( $5 \mu\text{g g}^{-1}$ ). In most of cases a single peak activity of protease was found (including zero conc.) which can be attributed to optimal conditions. In few cases secondary peaks were also seen. This might be due to solubilization, complexation and allosteric or competitive effect of organic acid on protease inhibitors. In case of 4-hydroxybenzoic acid, ferulic acid, L-tartaric acid and D-tartaric acid, a very significant inhibitory effect was observed at ( $p < 0.05$ ). In other compounds effect was dependent on soils type and concentration values. The obtained data indicate that naturally occurring soil L- and D-enantiomers of organic acids may play a significant role in regulation of key processes of N-mineralization and N-cycling in terrestrial ecosystems.*

**Keywords:** Proteases, LMOA, Forest soils, Pollutants in soil.

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