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COMPARATIVE PROTEOMIC ANALYSIS REVEALING THE NETWORK ASSOCIATED WITH METABOLIC STRESS PROCESS AND RESPONSE DEFENSE IN *MAYTENUS ILICIFOLIA* ROOT BARK

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During the growth and development, plants are vulnerable to the effects of pathogens. Proteomics plays an important role in research studies of plant defense response to various biotic stresses. *M. ilicifolia* is a medicinal plant native to southern Brazil, popularly known as "espinheira-santa". They exhibit as main secondary metabolites the quinonemethide triterpenes[1] and sesquiterpene pyridine alkaloids[2], which show restricted accumulation in young and adult plants (root bark). The proteomic analysis of seedlings and adult plants showed a great percentage (34% and 35%, respectively) of enzymes involved in the metabolic stress processes and defense response as well as a great percentage of enzymes involved in the biosynthesis of secondary metabolism (17%). The proteomic studies culminated in the identification of several proteins that are located at a branching point between the primary and secondary metabolism. Among those, some enzymes related to the generation of IPP, 3-hydroxy-3-methylglutaryl-CoA reductase corroborated the biosynthesis of mevalonic acid involving in such pathways. Faced with the abundant expression of enzymes involved in stress processes and responses, which are responsible for the production of metabolites of interest, the quinonemethide triterpenes and sesquiterpene pyridine alkaloids, previously isolated from *M. ilicifolia* root bark, were tested against *Xanthomonas albilineans*. The results indicated a potent activity of the triterpenes and alkaloids when compared with the positive control and suggest that there is a close correlation between the structural features and the measured proteome. Most phytopathogenic bacteria include *Pseudomonas spp., Xanthomonas spp., Erwinia spp., Agrobacterium spp., Corynebacterium spp., and Rhizobiumspp*. Some bacterial species elicit a varied responses and cause changes at the molecular and cellular levels.

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