

**POD-PPO state-dependent correlation as an adaptation indicator
in the vegetation of forest trees**

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Abstract

The correlation of biochemical variables and the regression of their values are very sensitive to physiological state alterations that make them be suitable for the characterization of the interaction between the plant and its environment and for the indication of plant adaptation ability, respectively. The concept of state-dependent correlation applied for the activities of peroxidase (POD; EC 1.11.1.7) and polyphenol oxidase (PPO; EC 1.10.3.1) was used to monitor the vegetation period of some forest trees. The POD and PPO activities of leaf extracts from Pendunculate oak (*Quercus robur* L.) and beech (*Fagus sylvatica* L.) trees provided linear correlation. Parameters of their state-dependent regressions have been established to be susceptible to the environmental conditions. Comparing the state-dependent regressions belonging to various sampling times to each other, deterministic alterations of POD-PPO regression are revealed that can be related to the alterations of temperature, relative humidity and global solar radiation. Beside the conservation of high values of the coefficient of determination (R^2), the vegetation sequence of the state-dependent regressions and the alterations experienced in those ones can be considered a consequence of the adaptation in the plant ecological system.