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# Does infrared spectrometry help in the study of somatic embryos maturation ?

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## ABSTRACT

Evaluating the physiological state of somatic embryos throughout their maturation is of great importance to determine their quality. This state is given by morphological parameters and their biochemical composition. The latter throughout the development of somatic embryos allows us to better understand their maturation and opens new perspectives for comparing embryogenesis protocols. However, biochemical analyses are time-consuming and material-intensive. Evaluating the relevance of using an alternative, rapid and economical method, which is infrared spectrometry, become therefore our challenge. We characterized hybrid larch somatic embryos throughout their maturation with determinations of their carbohydrate, lipid, protein, and water content (Savane et al., 2023). These results were then used to develop prediction models based on infrared spectrometry and chemometrics. These models were quantitative prediction of all these biochemical parameters, or qualitative models to evaluate the physiological state of somatic embryos. All these prediction models showed good prediction accuracies, between 65% and 89%.

In conclusion, infrared spectrometry combined with chemometric tools offers a new, fast and sample-saving method for monitoring the maturation of somatic embryos by accessing a set of information on their composition and physiological state contained in infrared spectra.

**Keywords** : infrared spectrometry; biochemical composition; *Larix eurolepis*; prediction; chemiometrics

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