

## Metabolic characterization of green pods from *Vanilla planifolia* accessions grown in La Reunion.

### ABSTRACT

Large phenotypic variation has been observed between the cultivated vanillas since a single genetic source of *Vanilla planifolia* was spread to the Indian Ocean and the Indonesia in the 19th century. In order to differentiate the cultivated vanilla plants, genetic studies have been conducted in the past on the plants grown in various regions such as the French island, La Réunion. However, the genetic difference was not big enough to differentiate diverse accessions of *V. planifolia*. In this study, metabolomics, in which genetic variation could be amplified, was employed to delve into the variation between the cultivated vanilla plants. To obtain a broad view of the metabolome, nuclear magnetic resonance (NMR) spectroscopy was applied to the analysis of *V. planifolia* green pods. Principal component analysis (PCA) and partial least square-discriminant analysis (PLS-DA) of the data showed that the accessions could be differentiated according to their glucovanillin and glucosides A and B contents. Furthermore, a correlation between the glucovanillin content and the pod length, number of flower and growth capacity of the accessions has been observed from the multivariate data analysis.

**Keyword:** *Vanilla planifolia*; Vanillin; Metabolomic analysis; Nuclear magnetic resonance spectroscopy; Phenolic glycosides; Glucovanillin.