

SL-3

doi: 10.14232/tnpr.2019.sl3

Metabolomic alterations in elicitor-treated grapevine *Vitis vinifera* leaves monitored by ¹H NMR

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Pest control represents a predominant issue in viticulture and it is currently achieved by intensive use of fungicides threatening environment and human health. Stimulation of defense responses by elicitors has become a promising alternative strategy of plant protection [1]. In this context, knowledge on impact of such compounds on primary metabolism is fundamental. The aim of this study was a metabolic characterization of grapevine leaves elicited by different molecules triggering jasmonic acid- and/or salicylic acid-dependent responses. Greenhouse *Vitis vinifera* cv. Cabernet Sauvignon cuttings were treated with methyl jasmonate, benzothiadiazole and potassium phosphonates. The changes in metabolism under each condition in regard to untreated leaves were evaluated using proton nuclear magnetic resonance spectroscopy (¹H NMR) followed by multivariate statistics. The extensive reprogramming of primary metabolic pathways was demonstrated. The highest concentration of the majority of the identified metabolites, particularly sugars (*myo*-inositol, fructose, sucrose, α - and β -glucose), some organic acids (malic, pyruvic, tartaric, ascorbic and fumaric acids), and phenolics (quercetin-3-*O*-glucoside, syringic, gallic and shikimic acids) was detected in control leaves. Some specific and/or common modifications according to the type of applied elicitor was noticed. A redirection of carbon and energy flow from primary to secondary metabolism in stress mimicked leaves was suggested.

Acknowledgements

The study was performed owing to the financial support of the French Government and the French Embassy in Poland.

Reference

[1] Delaunoy B et al. *Environ Sci Pollut R.* 2014; 21:4837-46.