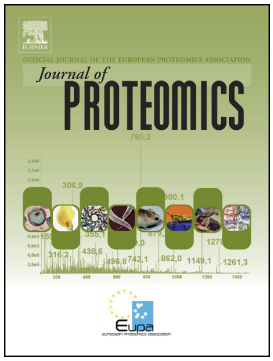

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Proteomics towards the understanding of elicitor induced resistance of grapevine against downy mildew

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ABSTRACT

Elicitors are known to trigger plant defenses in response to biotic stress, but do not systematically lead to effective resistance to pathogens. The reasons explaining such differences remain misunderstood. Therefore, elicitation and induced resistance (IR) were investigated through the comparison of two modified β-1,3 glucans applied on grapevine (*Vitis vinifera*) leaves before and after inoculation with *Plasmopara viticola*, the causal agent of downy mildew. The sulfated (PS3) and the shortened (H13) forms of laminarin are both known to elicit defense responses whereas only PS3 induces resistance against downy mildew. The analysis of the 2-DE gel electrophoresis revealed that PS3 and H13 induced distinct proteomic profiles after treatment and pathogen inoculation. Our results point out that the PS3-induced resistance is associated with the activation of the primary metabolism especially on amino acids and carbohydrates pathways. In addition, few proteins, such as the 12-oxophytodienoate reductase (OPR-like) related to the OPDA pathway, and an Arsenite-resistance protein (Serrate-like protein) could be considered as useful markers of induced resistance.

Significance

One strategy to reduce the application of fungicides is the use of elicitors which induce plant defense responses. Nonetheless, the elicitors do not systematically lead to resistance against pathogens. The lack of correlation between plant defense activation and induced resistance (IR) requires the investigation of what makes the specificity of elicitor-IR.

In this study, the two β-glucans elicitors, sulfated (PS3) and short (H13) laminarins, were used in the grapevine / *Plasmopara viticola* interaction since only the first one leads to resistance against downy mildew. To disclose IR specificity, proteomic approach has been