Hormonal Regulation of the Immune Response in *Arabidopsis thaliana* During Interaction with Plant-Growth Promoting Bacteria

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Plants interact with many organisms, establishing beneficial or pathogenic associations. Regardless of the organism and type of interaction that will develop with the host, the plant immune system is strictly regulated. The immune response is dependent of salicylic acid or jasmonates/ethylene accumulation. Recently, it was found that other hormones also act by regulating the response, as abscisic acid and auxins. Manipulating these hormonal pathways is an important strategy used by pathogens to subvert the immune response. However, there is a lack of studies that seek to understand the mechanisms related to activity of the immune system during the interaction between endophytic bacteria and plants. Thus, this study aimed to characterize the immune response activated in roots of *A. thaliana* during interactions with endophytic bacteria. To that end, we monitored the activation of promoter gene marker of immunity, *CYP71A12*, and the deposition of callose in wild plants and mutants to different hormonal pathways. Analyses were conducted during the interaction of plants with *Azospirillum brasilense*, *Glucanacetobacter diazotrophicus*, *Herbaspirillum seropedicae* and *Herbaspirillum rubrisubalbicans* and treatment with hormones. The results showed that 2,4-D active the immune response and its effect is negatively regulated by *OST1* gene. ABA antagonize 2,4-D, repressing *CYP71A12*. The *OST1* was essential to such action of ABA. Through studies that combined hormones and bacteria, we concluded that these hormones can modulate the defense in roots. Our results suggest unknown features of the response of roots to endophytic bacteria and the molecular mechanisms used by these microorganisms to block the host immune response.

Word Keys: callose, *CYP71A12*, endophytic bacteria, hormones, immune response

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