DDRT-PCR ANALYSIS of PUTATIVE ELEMENTS of the INNATE IMMUNE RESPONSE in PLANTS

NM SANABRIA and **IA DUBERY**

Dept of BIOCHEMISTRY, UNIVERSITY of JOHANNESBURG, JOHANNESBURG, 2006, SOUTH AFRICA

Innate immunity in animals and basal disease resistance in plants refers to a highly sensitive perception and signal transduction system for characteristic microbial molecules, called pathogen-associated molecular patterns (PAMPs), or general elicitors. Current models postulate that PAMPs are recognized by Toll-like receptors in animals and by receptor-like protein kinases in plants, activating signaling pathways that ultimately lead to a state of induced resistance (1). Lipopolysaccharides (LPS) are components of the cell surface of Gram-negative bacteria. As an outer membrane component, the tripartite LPS molecule may contribute to the exclusion of plant-derived anti-microbial compounds promoting the ability of a bacterial plant pathogen to infect plants. In contrast, LPS can be recognized by plants to directly trigger plant defense related responses (2,3,4). The coil structure of the O-chain of phytopathogenic bacteria could be a PAMP that is recognized by plants leading to the elicitation of specific defense-related responses. The isolation and identification of cDNAs, representing genes with up-regulated expression profiles induced by LPS, was experimentally achieved by RNA differential display. The bands of interest were isolated, re-amplified, analysed by reverse-Northerns, cloned and sequenced. The most notable differentially expressed transcripts (DETs), were shown to have sequence homology to an *Arabidopsis* gene encoding a S-like receptor protein kinase (SRK), a Traf interacting protein (TRAIP), a cecropin A precursor (Cec A), a stress 70 chaperone and a *Nicotiana glutanosa* virus resistance (N) gene. Their putative roles in LPS-induced defense responses are discussed in relation to emerging concepts of innate immunity and the guard hypothesis/ basal disease resistance. Further studies are currently being conducted to obtain full gene sequences, to determine the window of signal perception and transduction, as well as protein expression profiles with regards to LPS as a PAMP.

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