

Oligosaccharides released by pectinase treatment of Citrus limon seedlings are elicitors of the plant response

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Oligosaccharides of different sizes were released from intact Citrus limon seedlings treated with endopolygalacturonase obtained from *Alternaria alternata*. Also, an increase of phenylalanine ammonia lyase (PAL) activity and the formation of a phytoalexin, were observed. Only mechanically damaged, but not intact seedlings, were able to increase their PAL activity and to synthesize a phytoalexin, in response to isolated oligomers released from plant cell walls or obtained from polygalacturonic acid (PGA). The active oligomers (pectic fragments obtained from cell walls or pectic fragments obtained from PGA) contained between 17 and 23, or 13 to 20 units of galacturonic acid, respectively. Maximal PAL activation was obtained after 20 hr treatment of intact seedlings with endopolygalacturonase and after 7 or 4 hr of treatment of damaged seedlings with endopolygalacturonase or oligosaccharides, respectively. Also, as a result of the increase of PAL activity, the appearance of a phytoalexin w