



## Insight into the Role of Sugars in Bud Burst Under Light in the Rose

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Mots-clés	light [13], Rose bud [14], Signal [15], sucrose [16], Vacuolar invertases [17]
Résumé en anglais	<p>Bud burst is a decisive process in plant architecture that requires light in <i>Rosa</i> sp. This light effect was correlated with stimulation of sugar transport and metabolism in favor of bud outgrowth. We investigated whether sugars could act as signaling entities in the light-mediated regulation of vacuolar invertases and bud burst. Full-length cDNAs encoding two vacuolar invertases (RhVI1 and RhVI2) were isolated from buds. Unlike RhVI2, RhVI1 was preferentially expressed in bursting buds, and was up-regulated in buds of beheaded plants exposed to light. To assess the importance of sugars in this process, the expression of RhVI1 and RhVI2 and the total vacuolar invertase activity were further characterized in buds cultured in vitro on 100 mM sucrose or mannitol under light or in darkness for 48 h. Unlike mannitol, sucrose promoted the stimulatory effect of light on both RhVI1 expression and vacuolar invertase activity. This up-regulation of RhVI1 was rapid (after 6 h incubation) and was induced by as little as 10 mM sucrose or fructose. No effect of glucose was found. Interestingly, both 30 mM palatinose (a non-metabolizable sucrose analog) and 5 mM psicose (a non-metabolizable fructose analog) promoted the light-induced expression of RhVI1 and total vacuolar invertase activity. Sucrose, fructose, palatinose and psicose all promoted bursting of in vitro cultured buds under light. These findings indicate that soluble sugars contribute to the light effect on bud burst and vacuolar invertases, and can function as signaling entities.</p>
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