



Hexokinase-dependent sugar signaling represses fructan exohydrolase activity in *Lolium perenne*

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Résumé en anglais	<p>Defoliation of perennial ryegrass (<i>Lolium perenne</i> L.) by grazing animals leads to fructan mobilisation via an increase of fructan exohydrolase (FEH) activity. To highlight the regulation of fructan metabolism in perennial ryegrass, the role of sugars as signalling molecules for regulation of FEH activity after defoliation was evaluated. We used an original approach <i>in planta</i> by spraying stubble of defoliated plants (sugar starved plants) during 24 h with metabolisable sugars (glucose, fructose, sucrose) and sugar analogues (3-O-methylglucose, mannose, lactulose, turanose, palatinose). Metabolisable sugar (glucose, fructose, sucrose) supply following defoliation led to the repression of FEH activity increase. The supply of mannose, which is phosphorylated by hexokinase but not further metabolisable, led to the same repressive effect, whereas 3-O-methylglucose, which is not a substrate for hexokinase, had no effect. These results indicate that hexoses could be sensed by hexokinase, triggering a chain of events leading to the repression of FEH activity. By contrast, it was not possible to determine the role of sucrose as a signal since the supply of sucrose analogues (lactulose, turanose and palatinose) enhanced internal hexose content.</p>
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Liens

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