Cell wall degradation is controlled by temperature dependent polysaccharide conformation synchronised with temperature dependent enzyme activation.

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In some legume species, xyloglucan is the major reserve polysaccharides in the cotyledons. They are cell wall storage polysaccharides with a main of beta-(1,4)glucan backbone with alfa-(1,6)-linked D-xylosil branches, substituted or not with $\beta(1\rightarrow 2)$ -linked D-galactose residues. The basic polymer molecule is composed of heptasaccharide repeating units Glc₄Xyl₃ and/or Glc₅Xyl₄ with variation in the galactose residues substitution. In Hymenaea courbaril, seedling development is supported by xyloglucan mobilisation that involves four enzymes whose coordinated action performs its degradation and produces a decline in the dry mass of cotyledons. The enzymes are beta-galactosidase, xyloglucan transglycosilasehydrolase (XTH) besides α -xylosidase and a β -glucosidase. In cotyledons of H.courbaril the XTH has been shown to act as a Xyloglucan Endo Hydrolase (XEH) only if XG oligosaccharides are added to the incubation assay, suggesting that this enzyme is more similar to the XETs from the primary walls. Auxin produced in developing leaves is the principal messenger involved in the interaction between storage xyloglucan mobilisation and seedling growth. After storage mobilisation, seedlings start to depend exclusively on photosynthesis for growth and the first leaves (eophylls) establish their photosynthetic systems concurrently with the storage mobilisation, thus characterising a synchronic Xyloglucans are thought to display two conformations: helicoidal or pattern. flattened. Xyloglucans react with iodine forming a blue coloured complex. It is thought that the polyiodine complex is formed at the inner core of the helicoidal structure of xyloglucan. Although the nature of this complex is not yet fully understood, this interaction can be used to study the biochemical and biophysical properties and behaviour of xyloglucans under different environmental conditions such as cycles of increasing and decreasing temperatures, changes in pH, and the susceptibility to the action of enzymes. In the present work we show results that strongly suggest that seed xyloglucans change their conformation at physiological temperatures (between 20 and 40°C). We isolated the XTH activity from cotyledons of *H. courbaril*, characterised it and demonstrated that its best performance of its XEH activity is during the temperature transition corresponding change in polysaccharide conformation, but only to the if xvloalucan oligosaccharides are added. During germination and until the stage at which the eophylls become photosynthetically active, one of the main environmental factors affecting the physiological and biochemical processes appears to be temperature. Thus, the implications of these discoveries for seedling establishment and also for primary wall xyloglucan metabolism during growth will be discussed. Supported by FAPESP, CNPq.