As a clean and readily available agricultural residue, corn bran may have the potential of becoming a source for new C5 carbohydrates. The arabinoxylan backbone in corn bran is composed of a xylan backbone of β-(1-->4)-linked D-xylopyranosyl residues. Linkage analysis has suggested that up to 85% of the xylopyranosyl moieties are substituted with various components. The xylose units in the backbone are decorated with different kinds of side chain substitutions. Most common substituents are represented by arabinose, 4-O-methylglucuronic acid and acetyl moieties.

To achieve the complete degradation of such a complex molecule a set of enzymes is required. The hydrolysis of β-(1-->4)-D-xylan is accomplished by endo-xylanases which break the β-(1-->4) glycosidic bonds between xylopyranosyl moieties. The substituents side chain groups are hydrolyzed by α-L-arabinofuranosidases, α-glucuronidases and acetyl xylan esterases.
The present study is aimed at revealing the structure-function-activity relationships of the acetyl xylan esterase and α-L-arabinofuranosidase from Bacillus pumilus in a combined effort to identify and understand their catalytic mechanism, substrate specificity and metabolic function.


CONTACTS

Doriano Lamba
Email: doriano.lamba@ts.ic.cnr.it
Tel.: +39-040-3758514