

Heterologous expression, purification and characterization of a highly thermolabile endoxylanase from the Antarctic fungus *Cladosporium* sp.

Gil-Durán, Carlos

Ravanal, María Cristina

Ubilla, Pamela

Vaca, Inmaculada

Chávez, Renato

© 2018 British Mycological Society Numerous endoxylanases from mesophilic fungi have been purified and characterized. However, endoxylanases from cold-adapted fungi, especially those from Antarctica, have been less studied. In this work, a cDNA from the Antarctic fungus *Cladosporium* sp. with similarity to endoxylanases from glycosyl hydrolase family 10, was cloned and expressed in *Pichia pastoris*. The pure recombinant enzyme (named XynA) showed optimal activity on xylan at 50 °C and pH 6.7. The enzyme releases xylooligosaccharides but not xylose, indicating that XynA is a classical endoxylanase. The enzyme was most active on xylans with high content of arabinose (rye arabinoylan and wheat arabinoxylan) than on xylans with low content of arabinose (oat spelts xylan, birchwood xylan and beechwood xylan). Finally, XynA showed a very low thermostability. After 20-30 min of incubation at 40 °C, the enzyme was completely inactivated, suggesting that XynA would be the most thermolabile endoxyl