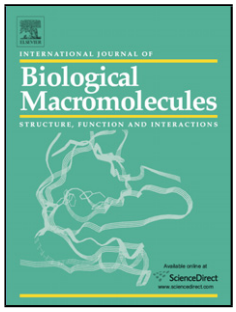

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Human Chitotriosidase Does Not Catabolize Hyaluronan

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Abstract

Humans express an enzyme that degrades chitin, called chitotriosidase, despite the fact that we do not produce chitin. One possible explanation for this is that chitinase also degrades hyaluronan, a polysaccharide that is abundant in human tissues and shares structural attributes in common with chitinase. The objective of this study was to determine whether human chitotriosidase is capable of hydrolyzing hyaluronan. Hyaluronan of various sizes under a range of pH conditions displayed no degradation when incubated with various chitinases over a period of 5 days, while commercial hyaluronidase readily digested the hyaluronan. Under the same conditions, recombinant chitinase but not our negative control chitinase, was able to digest chitosan. We conclude that human chitinase does not digest hyaluronan. Because chitin is a prominent component of certain fungi and insects, it seems likely that human chitinase evolved for roles in host defense rather than serving to catabolize the endogenous polymer hyaluronan.