THE SYNTHESIS AND DEGRADATION OF LEVAN BY *ACTINOMYCES VISCOSUS*

by

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ABSTRACT

Actinomyces viscosus ATCC 15987 has been shown to possess cellular as well as acellular fructosyltransferase and levan hydrolase enzymes when grown in media containing sucrose. Both enzymes show optimal activity at pH 6.0 at 37°C.

Levan hydrolase appears to be induced by sucrose and levan. The Km for the cellular levan hydrolase is 5×10^{-4}M levan.

Fructosyltransferase from A. viscosus is a constitutive enzyme. The Km for the extracellular enzyme was calculated to be 6.1×10^{-3}M sucrose, and the Km for the cellular fructosyltransferase is 22.2×10^{-3}M sucrose.

A. viscosus can degrade sucrose by the action of a β-fructofuranosidase (invertase) to produce glucose and fructose. Sucrose can also be converted to levan and free glucose by the action of the fructosyltransferase enzymes from this microorganism. The levan can in turn be degraded to free fructose by the action of a β-fructofuranosidase (levan hydrolase).