

Calf and Lamb Lingual Lipases as Catalysts for the Hydrolysis of Tributyrin, Triolein, and 4-Nitrophenylacetate

Charmian J. O'Connor¹, Robyn D. Manuel¹, and Keith W. Turner²

¹ Department of Chemistry University of Auckland PB 92019 Auckland, New Zealand

² New Zealand Rennet Company Ltd. PO Box 122 Eltham, New Zealand

The lingual lipases from calf and lamb were used as catalysts for the hydrolysis of the lipid, tributyrin, and the relatively hydrophilic ester, 4-nitrophenylacetate. The effects of pH on these reactions and of temperature on the reaction against 4-nitrophenylacetate were measured. Calf lingual lipase was used also to catalyze the hydrolysis of triolein. Under comparable conditions, calf lingual lipase was a more effective catalyst than lamb lingual lipase. Michaelis-Menten constants were evaluated and showed that the preferred substrates for the enzyme were tributyrin, then 4-nitrophenylacetate, and then triolein. For tributyrin and 4-nitrophenylacetate, the optimal pH were 6.9 and 8.0, respectively, for the calf enzyme and 6.6 and 6.8, respectively, for the lamb enzyme. The temperature optima against 4-nitrophenylacetate were 37.5 and 30° C for calf and lamb lingual lipases, respectively.

Key Words: calf • lamb • lingual lipase • catalyzed hydrolysis

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