

Degradation of Native Feathers by a Novel Keratinase-Producing, Thermophilic Isolate, *Brevibacillus thermoruber* T1E

Zoltán Bihari^{a,*}, Diána Vidéki^a, Erzsébet Mihalik^b, Attila Szvetnik^a, Zsolt Szabó^a, Margit Balázs^a, Péter Kesserű^a, and István Kiss^a

^a Department of Applied Microbiology, Institute for Biotechnology, Bay Zoltán Foundation for Applied Research, Derkovits fasor 2., H-6726 Szeged, Hungary.
Fax: +36-62-432250. E-mail: bihari@bay.u-szeged.hu

^b Department of Plant Biology, University of Szeged, Szeged, Hungary

* Author for correspondence and reprint requests

Z. Naturforsch. **65c**, 134–140 (2010); received September 10/October 22, 2009

Strain T1E, isolated and identified as *Brevibacillus thermoruber*, and evolutionally distant from the known keratinolytic isolates, proved to have feather-degrading ability. During the 7-day fermentation period, T1E consumed 10 g/l native goose feathers as the sole source of carbon and energy at 50 °C under aerobic conditions. The isolate secreted a thermostable, keratinolytic protease, which exhibited activity optimally at pH 6.5, whilst it was inhibited at alkaline pH. The keratin cleavage and catabolism resulted in the accumulation of free aspartic acid and soluble peptides with maximum values of 31.6 and 720 mg/l, respectively. The majority of the fermentation end-products were found to be small oligopeptides with an average molecular mass of 2275 Da.

Key words: Feather, *Brevibacillus thermoruber*, Keratinase