



Isolation and Characterisation of Keratinase Producing Bacterial Strains

• Komal • Resham Sinha
• Pinky Prasad

Received : November 2012

Accepted : March 2013

Corresponding Author : Pinky Prasad

Abstract : *The aim of the current study was to isolate keratinolytic bacteria from the soil samples collected from different poultry shops in Patna (Shivpuri and Danapur.) The bacterial isolation was performed by the standard serial dilution and spread plate technique. The isolated strains were screened for their keratinolytic activity by inoculating them in basal media enriched with chicken feather waste. Among the eight keratinolytic isolates, two strains designated as S-2 and S-6 showed effective feather degradation in the medium and were selected for further study. The enzyme activities of these two strains were studied by “Agar Well Diffusion” method, and the zones of hydrolysis were found to be 26 mm for S-2 and 31 mm for S-6. The optimum enzyme activity of both the selected strains was observed at temperature 35°C; and at pH 7 for S-2 and pH 8 for S-6, respectively.*

Key words: *Keratinolytic bacteria, feather waste degradation, keratinase, alternative protein.*

Komal

B.Sc. III year, Industrial Microbiology (Hons.),
Session : 2010-2013, Patna Women's College,
Patna University, Patna, Bihar, India

Resham Sinha

B.Sc. III year, Industrial Microbiology (Hons.),
Session : 2010-2013, Patna Women's College,
Patna University, Patna, Bihar, India

Pinky Prasad

Assistant Professor, Deptt. of Industrial Microbiology,
Patna Women's College, Bailey Road,
Patna – 800 001, Bihar, India.
E-mail : dr.pinkyprasad@gmail.com

Introduction :

Keratin is an insoluble protein macromolecule with very high stability and low degradation rate. Keratin is mainly present in hair, feather, nails, wool and horns. High protein content of keratin waste can be used as a good source of protein and amino acids by systemic recycling (Onifade *et al.*, 1998). Feathers are largely produced as a waste by-product at poultry plants (Williams *et al.*, 1991). They are insoluble structural proteins cross-linked by disulfide, hydrogen and hydrophobic bonds but could represent a rich protein resource because they contain over 90% (w/w) keratins. Recycling of feather can provide a cheap and alternative protein feed stuff. Further this can be used as animal feed and for many other purposes. However, poor digestibility of keratin is a problem in recycling (Takami *et al.*, 1992; Williams *et al.*, 1991). Feathers contain over 90% of protein and conversion of feather into feed by keratinolytic bacteria may prove to be an economically viable option. The keratinolytic microorganisms and technologies developed for feather degradation not only remove the waste feather efficiently from the nature but also make the by-product of the process a valuable protein supplement. Further, this feed is relatively superior to other protein supplement like