

## Optimization of medium and cultivation conditions for chitinase production by the newly isolated: *Aeromonas* sp

Al Ahmadi, K.J.<sup>ab</sup>, Yazdi, M.T.<sup>a</sup>, Najafi, M.F.<sup>c</sup>, Shahverdi, A.R.<sup>a</sup>, Faramarzi, M.A.<sup>a</sup>, Zarrini, G.<sup>d</sup>, Behravan, J.<sup>be</sup>

<sup>a</sup> Biotechnology Research Center, Department of Pharmaceutical Biotechnology, Tehran University of Medical Sciences, Tehran, Iran

<sup>b</sup> Biotechnology Research Center, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran

<sup>c</sup> Department of Veterinary Research and Biotechnology, Razi Vaccine and Serum Research Institute, Mashhad, Iran

<sup>d</sup> Department of Animal Biology, Faculty of Natural Sciences, Tabriz University, Tabriz, Iran

<sup>e</sup> Biotechnology Research Center, Faculty of Pharmacy, Mashhad University of Medical Sciences, P.O. Box 91775-1360, Mashhad, Iran

[View references \(7\)](#)

### Abstract

Fifty strains of different microorganisms with ability to degrade chitin were isolated during a screening program. One of the most potent isolates (strain JK1) was identified as *Aeromonas* sp. and was deposited in Persian Type Culture Collection (PTCC 1691). Identification was carried out using morphological and biochemical properties along with 16S rRNA partial sequence analysis. This strain was able to produce high levels of extracellular chitinase in media containing chitin as sole carbon source. The effects of medium composition and physical parameters on chitinase production by this organism were studied. The optimized medium was found to contain colloidal chitin 0.5% (w/v), ammonium sulfate 0.1% (w/v), magnesium chloride 7.0 mM and Triton X-100 0.2% (v/v). The highest enzyme production by *Aeromonas* sp. JK1 was obtained at pH 8, 30°C and after 24 h growth. With respect to high amount of chitinase production by this strain in a simple medium and the relatively short time, this strain could be a suitable candidate for production of chitinase on an industrial scale and merits further investigation into its structure and characteristics. © 2008 Asian Network for Scientific Information.

### Reaxys Database Information

### Author keywords

*Aeromonas* sp.; Chitinase; Medium optimization

### Indexed Keywords

**Engineering controlled terms:** Ammonium compounds; Chitin; Cultivation; Food additives; Light metals; Magnesium; Optimization; Polysaccharides; Sulfate minerals

**Engineering uncontrolled terms:** 16S rRNA; *Aeromonas*; *Aeromonas* sp.; Ammonium sulfates; Biochemical properties; Chitinase; Colloidal chitin; Cultivation conditions; Culture collection; Enzyme production; Extracellular chitinase; Industrial scale; Magnesium chloride; Medium composition; Medium optimization; Persian; Physical parameters; Sequence analysis; Short time; Sole carbon source; Triton X-100

**Engineering main heading:** Strain

**Species Index:** *Aeromonas*; *Aeromonas* sp.

ISSN: 1682296X Source Type: Journal Original language: English

DOI: 10.3923/biotech.2008.266.272 Document Type: Article