

## Optimization of cultural conditions for production of hyaluronidase by *Bacillus sp.* LA\_04

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**Background and Aims:** Hyaluronidase had a panoramic use in biotechnology processes and therapy. Hyaluronidases could be found in animal testis, venomes of insects and snakes and also produced in various spectrum of microorganisms. The bacteria were the most important hyaluronidase producing microorganisms. Based on the medical and commercial importance of hyaluronidases, in this study the optimization of cultural conditions for production of hyaluronidase by *Bacillus sp.* LA\_04 was performed.

**Methods:** *Bacillus sp.* LA\_04 was isolated from dental plaque. The optimization of cultural conditions was performed with the turbidity reduction assay wherein one factor became stable among other factors. This method was repeated for other factors. The effects of incubation period (24,48h), incubation temperature (20,30,37,45°C), initial pH (4.5-8.5), substrate concentration (200,400 µg/ml), nitrogen and carbon sources (yeast extract, Trypton, ammonium chloride, ammonium nitrate, ammonium sulfate, sorbitol, maltose) and NaCl with different concentration on production of hyaluronidase by *Bacillus sp.* LA\_04 were evaluated.

**Results:** The maximum production of hyaluronidase by promising isolate was obtained in temperature 37°C, pH 6.5, 1% NaCl, 0.5% yeast extract, 0.2% ammonium chloride, 400 µg/ml hyaluronic acid, after 48 hours of incubation.

**Conclusions:** *Bacillus sp.* LA\_04 can be a good candidate for biotechnology, commercial and pharmaceutical purposes.

**Keywords:** *Bacillus sp.*; LA\_04; Hyaluronidase; Turbidity reduction assay; Optimization of cultural