

### Recombinant Production of $\alpha$ -Amylase Enzyme Used in Fruit Juice Production

**Authors:** Fatmanur Mavi<sup>1</sup>, Ayça Uras<sup>2</sup>, Fatma Ersöz<sup>3</sup>, Mehmet İnan<sup>2,4</sup> and Aysun Özçelik<sup>1</sup>

**Affiliation:** <sup>1</sup>Akdeniz University, Faculty of Agriculture, Department of Agricultural Biotechnology, Antalya, Türkiye; <sup>2</sup>Akdeniz University, Faculty of Engineering, Department of Food Engineering, Antalya, Türkiye; <sup>3</sup>Ardahan University, Faculty of Agriculture, Department of Food Engineering, Ardahan, Türkiye; <sup>4</sup>Izmir Biomedicine and Genome Center, Izmir, Türkiye.

[aysunozcelik@akdeniz.edu.tr](mailto:aysunozcelik@akdeniz.edu.tr)

Fruit juice production, which is one of the agriculture-based industries in our country, has become an industry branch that develops and gains importance day by day. High production speed, quality and stable product are among the most important parameters in fruit juice production. Pectic substances, starch, polyphenols, proteins etc. cause turbidity in fruit juice. These colloids must be broken down to their small molecules for a clear and stable juice production. For this purpose, pectinase and amylase group enzymes are widely used. The fact that these enzymes are not produced in our country leaves the producer dependent on abroad for accessing the enzyme, but also increases the costs of fruit juice production. In this study,  $\alpha$ -amylase enzyme was produced under the control of inducible *SNT5* promoter in methylotrophic yeast *Pichia pastoris* extracellularly. Shake flask experiments were conducted to evaluate the effect of pH (pH 3, 4, 5, 6 and 7) and temperature (20°C, 24°C and 28°C) on the production of  $\alpha$ -amylase. The culture was harvested 120 hours later, the supernatants were analysed by SDS-PAGE, the enzyme activity and total protein concentration were also measured. The results showed that the maximum enzyme activity and protein concentration were obtained at 24°C and pH 7 conditions. The highest  $\alpha$ -amylase activity and total protein concentration were determined as 288 U/mL and 623 mg/L, respectively.

**Keywords:**  $\alpha$ -Amylase; *Pichia pastoris*; SNT5 promoter.

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