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Production of β -galactosidase enzyme from *Kluyveromyces* spp. isolated from natural kefir

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Real kefir produced by traditional methods using kefir grains. Kefir grains are a very special building which covers large group of bacteria and yeast in a natural way. This microflora consisting of lactic acid bacteria, acetic acid bacteria and the yeast are present as a symbiotic community in kefir polysaccharide produced by this bacteria. Microorganisms in kefir structure provides easy to digest this product and increases the absorption of nutrients by the body. Increased attention to the functional foods by conscious customers also increases the great interest in kefir. Kefir is rich in probiotic bacteria and yeast provides partial breakdown of proteins and lactose with various enzymes. Industrially, *Kluyveromyces* spp. has been used as source of inulinase, β -galactosidase, β -glucosidase, protein phosphatases, aminopeptidases, endopolygalacturonases, carboxypeptidases. The potential industrial applications of these enzymes are increasing day by day. In this study; *Kluyveromyces marxianus* isolated from natural kefir was used for production of β -galactosidase enzyme. Enzyme activity was analyzed by the spectrophotometric method. The effect of temperature and pH on the production of β -galactosidase enzyme in the shaking culture system was investigated and the maximum enzyme activity temperature and pH were determined. Respectively, the maximum enzyme activity and the specific enzyme activity was obtained 4,20 U ml⁻¹, 47,31 U mg⁻¹ at the optimum levels of process variables pH 8.0, temperature 30°C, agitation speed 200 rpm and incubation time 48 h. The results of this study showed that *Kluyveromyces marxianus* isolated from natural kefir is capable of producing a high level of β -galactosidase with high specific activity. Considering the high yield of β -galactosidase *Kluyveromyces marxianus* may be a potentially useful industrial strain for the production of β -galactosidase. Thus the characterization of β -galactosidase produced by *Kluyveromyces marxianus* and the purification of this enzyme are aimed at industrial applications in the field of dairy products.

Biography

Tugba Kok Tas graduated from Suleyman Demirel University in 2001 and she studied her Master's degree at the same university. Her thesis was on viscosity of ayran with different cultures. She worked on her PhD at the Suleyman Demirel University during 2005-2010 about kefir technology. Her research interests are fermented food products, flow properties of foods, functional foods, improvement in kefir/ kefir grain technology and effect of health on functional foods with animal tests.

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