Zulal Kesmen et al., J Food Process Technol 2016, 7:12 (Suppl)
http://dx.doi.org/10.4172/2157-7110.C1.056

Transcription of a bovine collagen gene fragment in yeast (*Pichia pastoris*) cells

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Gelatin is a multipurpose food additive widely used in the food industry. It is a hydrolyzed protein that produced through acid and alkaline extraction of collagen from animal tissues such as pig skin, bovine hides and their bones. Consumers may have some hesitations about the animal derived gelatin use in food and pharmacological products. Since in Islamic beliefs, consuming of products derived from non-halal sources is certainly forbidden, instead of animal derived gelatin, alternative gelatin sources must be developed to contribute to the protection of religious precision. Recently, recombinant collagen has been expressed in microbial hosts, and became one of the most popular collagen alternatives especially for medical applications. In this research, a bovine collagen gene fragment was transcribed in a yeast expression system to produce bovine recombinant gelatin for the food industry. For this purpose, a 1000 bp length fragment of bovine (*Bos taurus*) collagen, *COL1A1* gene was transferred to *Pichia pastoris* KM71 yeast strain cells by electroporation, and transcription of the gene fragment was checked by PCR. Approximately, 1000 bp PCR product was obtained as targeted gene fragment, and accuracy of the PCR products was controlled by sequence analysis. When the nucleotide sequence was searched from GenBank database, a 99% alignment was observed with *Bos taurus COL1A1* gene sequence. Consequently, a target bovine collagen gene fragment was successfully transcribed in *P. pastoris* as a one of the most important step of recombinant collagen production but there is more research needed to achieve optimal functional recombinant collagen/gelatin for the industry.

Biography

Zulal Kesmen has received her PhD from Ataturk University, Turkey. She is an Associate Professor at the Department of Food Engineering in Erciyes University, Kayseri, Turkey. She has been working on Food Microbiology and Biotechnology.

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