

Use Of Real-Time PCR and High-Resolution Melting Analysis for the Identification and Discrimination of *Saccharomyces boulardii* Strains by *AAD15* and *MAL11* Genes

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With the awareness of healthy nutrition developing around the world, foods have ceased to be only for nutritional purposes, and the demand for functional foods has increased at a high rate. Functional foods are frequently preferred due to their features such as providing basic nutritional requirements as well as having a positive effect on chronic diseases and gastrointestinal health. Various microorganisms can be used for foods to have functional properties. *Saccharomyces cerevisiae* var. *boulardii* is a probiotic yeast that can provide functionality. The use of *S. boulardii*, a variety of *S. cerevisiae* which is one of the most used microorganism worldwide, is frequently preferred in the food industry. *S. boulardii*, which has been proven to be effective especially in the treatment of diarrhea by *in vivo* and *in vitro* studies, can provide advantage against other microorganisms, mainly due to its ability to grow optimally at body temperature and to remain viable even at gastric pH.

The aim of this study was to design a new HRMA assay to differentiate *Saccharomyces boulardii* with *Saccharomyces cerevisiae* by two new primers specifically designed for both *AAD15* and *MAL11* genes for this study. HRMA is a cost effective and fast method being used for gene scanning and genotyping. For the rtPCR-HRMA all of the *Saccharomyces cerevisiae* strains were provided by FoodOmics Culture Collection. Considering the optimum growth temperatures and viability at gastric pH, one of the strains were suitable for DNA extraction followed by HRMA. For control *S. cerevisiae* var. *boulardii* CNCM I-745[®] and *S. cerevisiae* ATCC[®]9763 were used. As a result, both primers for *AAD15* and *MAL11* genes were successfully able to differentiate *Saccharomyces boulardii* strains by using rtPCR-HRMA.

Keywords: *S. boulardii*, Identification, rtPCR, High-Resolution Melting Analysis.