

Enzymatic pretreatment of protein of cereal raw materials for *Lactobacillus* and *Bifidobacterium* fermentation

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Abstract

The aim of present study is choose of proteolytic enzyme and its concentration for preprocessing of cereal protein and obtaining of the probiotic products with high count of lactic acid bacteria using the hydrolysates. The submerged fermentation of *Lactobacillus paracasei* B4079 in media based on hydrolysate of whole-wheat flour and *Bifidobacterium bifidum* № 1 in media based on hydrolysate of wheat flour of the highest grade and whole-rye flour was carried out.

It was showed, that ultimate yeald of protein extraction from whol-wheat flour took place at 0.06 % (on flour dry matter) concentration of Protex 40 E or 2% (on flour dry matter) concentration of Protosubtilin G3x. The highest count of lactobacillus ($8.8 \cdot 10^8$ CFU/ml) was obtained after 48 h fermentation of wheat meal treated with Protex 40 E (0.06%), while the count of lactobacillus after 48 h fermentation of wheat meal treated with Protosubtilin G3x (2%) was lower ($5 \cdot 10^8$ CFU/ml). It should be mentioned, that the costs of preprocessing using Protex 40 E are to be lower comparing with Protosubtilin G3x although the cost of the first one is about 7 times higher.

Also, the fermentation of *Bifidobacterium bifidum* №1 in media composed of hydrolysates of whole-rye flour or wheat flour (Protex 40 E or pharmaceutical grade pancreatine at concentration 1% of protein contetnt) and additional components was studied. It was revealed, that the hydrolysates of wheat flour are more suitable for bifidobacteria fermentation comparing with the rye hydrolysates. Count of bifidobacteria was greater ($4.7 \cdot 10^8$ CFU/ml) after 20 h fermentation in media composed of the pancreatic hydrolysate of wheat flour, glucose, yeast extract, L-cysteine and mineral components.

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