

PHYSICOCHEMICAL COMPARISONS OF YEAST CELL WALL COMPONENTS FROM DIFFERENT COMMERCIAL STRAINS OF YEAST

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There is an increasing interest in the use of yeast cell wall materials as biologically active agents in animal and human diets. Nutritional and physiological studies have clearly established the role of these materials as modulators of: nutritional processes, pathological processes and immune function. In addition, yeast cell wall carbohydrates have been used as mycotoxin-sequestering agents in animal feeds.

Our recent studies has focused on developing methods for separation and characterization of cell wall components from two industrial strains of yeast, in order to better understand the potential applications of specific yeasts in animal feeds and human foods.

In these studies we used: chemical extraction of YCW, ultra-filtration separation and LC on cellulose for extracts purification and ¹H NMR and Combustion Analysis to characterize the YCW from two industrial strain of yeast.

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Sample	Weight% Yeast I	Weight% Yeast II	Mannan% Yeast I	Mannan% Yeast II	Protein% Yeast I	Protein% Yeast II
Crude YCW extract	NA	NA	22.4	48.0	44.9	31.8
Ultra-filtered YCW extract	NA	NA	54.9	62.9	27.4	15.5
LC Fractions # 1-4	Not present	53.6	X	59.5	X	17.3
LC Fractions #19-23	5.2	Not present	51.8	X	26.9	X
LC Fractions #24-32	17.5	12.4	62.1	78.2	23.7	10.4
LC Fractions #33-41	26.0	18.4	66.8	76.8	17.4	8.8
LC Fractions #42-54	25.9	5.9	69.3	82.0	15.7	10.1

These separations clearly showed differences in the composition of the YCW from two different strains of yeast. We found that the ratios of, α -Mannan to Protein in fractions separated from YCW can vary substantially and depend not only upon the yeast strain, but also on the conditions of yeast growth [1] and fractionation [2].

[1]. B.Aguilar-Uscanaga and J.M. Francois Lett.Appl.Microbiology 2003, **37**,268-274

[2]. F.M. Klis, P. Mol, K. Hellingwerf, S. Brul FEMS Microbiol. Rev. **26** (2002) 239-256