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THE COMPOSITION OF ISOLATED VOLUTIN GRANULES OF *SACCHAROMYCES CEREVISIAE* UCM Y-517

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Introduction. Volutin polyphosphate granules are intracellular complexes of the linear polymers of condensed inorganic phosphates, which are linked by high-energy phosphoanhydride bonds, with other compounds. The studies of the composition of isolated volutin granules are sporadic and mainly performed on bacteria with only one work on yeasts. The aim of this work was a detailed study of the composition of isolated volutin granules of *Saccharomyces cerevisiae* UCM Y-517.

Methods. Volutin granules were isolated by method of Eixler et al. (2005) and studied by energy-dispersive X-ray spectroscopy, protein and polyphosphate electrophoresis, gas chromatography.

Results. The high phosphorus concentration in isolated volutin granules was confirmed. This phosphorus has mainly been presented by high molecular polyphosphates (< 200 phosphate residues). The metal composition showed the highest signal from K, a lower one from Mg and Ca, as well as traces from Na and Fe. Detected trace of sulfur and sufficiently high values of carbon and oxygen could indicate the presence in isolated volutin granules of proteins and other organic compounds. Volutin contains two protein fractions with molecular masses of 5-15 and 50-

100 kDa. High hydrophobicity (87%) could suggest that isolated volutin granules have lipids. There were detected two saturated fatty acids that had 16 and 18 carbon atoms.

Discussion. Literature data on the chain length of granule polyphosphates were contradictory. Our results have demonstrated their long-chained nature. Proteins of yeast volutin are known to be presented by only one fraction (10-20 kDa). However, we showed the second heavier fraction. Here we first report the presence of lipids in yeast volutin. Metal content in volutin directly depends on nutrient medium, with K, Mg, Ca being most abundant, that is confirmed by our data.

Conclusions. Thus, volutin granule composition of yeast *S. cerevisiae* involves high molecular polyphosphates, metals K, Mg, Ca, Na and Fe, proteins of two fractions with molecular masses of 5-15 and 50-100 kDa, two saturated fatty acids with chain length of 16 and 18 carbon atoms.

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