

NEW HYPOTHESIS OF THE REGULATION OF V-H⁺-ATPase BY EXTRACELLULAR GLUCOSE

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V-type H⁺-ATPases are important enzymes in several key physiological processes. The pump shows a 2-3-fold decrease of its activity when glucose is low and reactivated rapidly after glucose addition. The widely accepted explication of this phenomenon suggests the full dissociation of 70-80% of the V₁ complex from the membrane-bound V₀ complex and their subsequent re-association, respectively. We verified the hypothesis performing dot blot with monoclonal antibodies raised against the subunits "A" and "B" of V₁ and "a" of V₀ and membranes isolated from spheroplasts incubated without and with glucose and then fractionated in sucrose density gradient. Data of four experiments showed that without glucose the immunoresponse of catalytical subunit "A" and regulatory subunit "B" decreased only by 28% and 19% and that of subunit "a" increased by 45%, while the initial velocity of the H⁺ transport activity decreased 7.7-fold. There were not a remarkable difference between the immunoreactivity of the subunits of the enzyme of ER, Golgi and vacuoles in those conditions. We conclude that down-regulation of pump by low glucose doesn't need a dissociation of the complexes but just makes their interaction weaker keeping a possibility for quick functional re-association and specific localization of the different enzyme forms to distinct organelles.

Key words: yeast, H⁺-ATPase, glucose. Supported by CAPES, CNPq.