

ADP-dependent phosphofructokinases from the archaeal order

Methanosarcinales display redundant glucokinase activity

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© 2017 Elsevier Inc. The genome of Methanosarcinales organisms presents both ADP-dependent glucokinase and phosphofructokinase genes. However, *Methanococcoides burtonii* has a truncate glucokinase gene with a large deletion at the C-terminal, where the catalytic GXGD motif is located. Characterization of its phosphofructokinase annotated protein shows that is a bifunctional enzyme able to supply the absence of the glucokinase activity. Moreover, kinetic analyses of the phosphofructokinase annotated enzyme from, *Methanohalobium evestigatum* demonstrated that this enzyme is also bifunctional. The high conservation of the active site residues of all the enzymes from the order Methanosarcinales suggest that they should be bifunctional, as was previously reported for the ADP-dependent kinases from Methanococcales, highlighting the redundancy of the glucokinase activity in this archaeal group. The presence of active glycolytic enzymes would be important when glycogen storage of these organisms