New Approach to Synthesis of Glucose-Phosphates and Their Use to Increase the Efficiency of ATP

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The aim of presented work: 1. Elaboration of new approach for glucose-6-phosphate preparation 2. Phosphate-ions delivery into cell consisting of glucose The main target of this work is to delivery a phosphate-group consisting of glucose into cell and reduce ATF consumption for glucose phosphorylation and promotion ATF synthesis from ADF. In order to bring a phosphate group to sixth carbon atom the 1, 2 and 3 hydroxyl groups must be blocked. Therefore a certain sequence of chemical transformation has been observed: glucoses interaction with sulfinyl chloride (blocking reagent) in the presence of pyridine, future reaction with chlorine anhydride of dialkyl phosphates and one-stage availability of glucose-6-phosphate. Because of the low yield of target product (20%) in suggested method the new way for phosphate groups introduction has been offered. In this case reaction is carried out without blocking agent as long as selected reagent (trichloranhydride of phosphon dichloracetic acid) is used at the same time as phosphorylating and prohibit agent. The pointed preparation method allowed to increase the yield of glucose-6-phosphate up to 50-60%. Addition of the synthesized glucose-phosphates to rats food in amount of 0,5-1% leads to increasing their activity. In order to get the full approval of glucose-6-phosphate entry into cell it is necessary to use the isotopes technique. We succeed in elaboration of new approach for glucose-6-phosphate preparation. In laboratory conditions the influence of synthesized preparation on rats activity has been determined and apparently may be concerned with increasing of ATF content in human.

Awards Won: