Z406 Effects of iron on mitochondrial function in rat tissues

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Iron is physiologically essential and biochemically dangerous. Iron overload may amplify the damaging effects of radical production. So, we studied cytochorome c oxidase and malate dehydrogenase activities, respiration control ratio for examining the function of rat liver and testis mitochondria. The function in mitochondria is suggested by change in activities of cytochrome c oxidase. Cytochrome c oxidase (COX), the terminal enzyme of the mitochondrial respiratory chain, transfers electrons from cytochrome c to oxigen, carrying out the vectorial pumping of protons. In liver and testis, COX activities increased in iron-treated group. Mitochondrial malate dehydrogenase (MDH), is usually used to a marker for oxidative metabolism. In liver, iron treatment decreased MDH activity , and iron treatment increased MDH activity in testis. RCR, a marker of repiratory chain reaction on intact mitochondria, is decreased or similar in iron-treatment group.

Z407 Isolation and Characterization of Lectin from the Manila Clam, Ruditapes Philippinarum

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Lectins are well known as carbohydrate-recognizing proteins that interact with carbohydrate chains of glyco-conjugates. In bivalves lectins are also responsible for transportation of carbohydrates, cell- to-cell recognition, tissue regeneration, shell repair and host defense. In this study we have isolated and characterized lectins in a marine bivalve, Ruditapes philippinarum, for studying role of lectins in immunological defense. For isolating the Manila clam lectin (MCL), affinity chromatography on mucin-Sepharose, ion-exchange chromatography on DEAE- Toyoperl and gel filtration on Sephacryl S-300 was applied on the clam mucus containing lectins. SDS-PAGE under non-denaturing condition showed that MCL is protein with molecular mass of 138 kDa. Reduction with DTT in electrophoresis also revealed that MCL was composed of three subunits with molecular mass of 74, 34 and 30 kDa. MCL was found to be C-type lectins and optimal Ca2+ concentration was 20 mM. MCL activity was stable in the pH range between 6 and 9. MCL was also susceptible to heat incubation at 90C resulted in completely irreversible denaturation. Activity of MCL was not influenced the presence of monosaccharides such as Man, Fuc, Gal, Glc, GlcNAc, NeuNAc. In contrast, MCL activity was strongly inhibited by the presence of porcine mucin, N-acetyl-D- galactosamine, human embryonic alpha-1 acid glycoprotein and high-branched mannans isolated from marine halophilic bacteria. MCL also showed a specific reaction to N-acetyl-D-galactosamine containing glycoconjugates with mucin-type carbohydrate chains and high-branched mannans simultaneously.