

The effect of diabetes, nutritional factors, and sex on rat liver and kidney mevalonate kinase, mevalonate-5-phosphate kinase, and mevalonate-5-pyrophosphate decarboxylase

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The activities of rat liver mevalonate kinase (EC 2.7.1.36), mevalonate-5-phosphate kinase (EC 2.7.4.2), and mevalonate-5-pyrophosphate decarboxylase (EC 4.1.1.33) decrease when rats are fasted, fed with a diet containing 2% cholesterol, or made diabetic. Enzyme activities are increased when the animals are fed with a diet containing 3% cholestyramine. In rat kidney, the enzyme activities are lowered in diabetic and fasted rats, but do not change in cholesterol or cholestyramine feeding. The results obtained with the liver enzymes, when taken together with those of other authors, indicate a coordinate variation in the activities of several enzymes in the biosynthesis of cholesterol that catalyze steps from acetyl coenzyme A to squalene. The behavior observed for the kidney enzymes support the view of common steps for the metabolism of mevalonate via the sterol and nonsterol pathways and indicate also coordinate variation in the activity of the enzymes investigated in this work. In femal