Dietary antioxidants and chronic pancreatitis.

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Abstract

Fifteen patients with idiopathic chronic pancreatitis (aged 17-78 years), who had not altered their diet since their first symptoms, completed 7-d weighed dietary records at home. The computed information was compared with that from 15 age- and sex-matched volunteers. Attention was focussed on the intakes of antioxidants and unsaturated fatty acids. The patients ingested less selenium, vitamin E, vitamin C and riboflavin than did controls (P less than 0.001, P less than 0.02, P less than 0.001 and P less than 0.05 respectively, using paired t-tests): selenium was by far the best discriminator on step-wise analysis. When the selenium intakes were examined alongside the results of theophylline tests--which reflect cytochromes P450 activities and, thereby, provide an index of antioxidant demand--a line of discrimination separated the majority of patients (with faster drug clearances and lower selenium intakes) and controls. There were no differences in the intakes of individual unsaturated fatty acids, C14:1 through to C24:6, between the two groups. However, amongst six subjects in the overlap zone, three with chronic pancreatitis habitually ate greater amounts of highly unsaturated fatty acids C20:4 to C24:6 inclusive (1970, 1049, 750 mg/d) than did three controls (329, 320, 82 mg/d). Animal experiments show that suboptimal intakes of dietary antioxidants and/or excessive intakes of highly unsaturated fatty acids and/or induction of cytochromes P450 facilitate peroxidation of cellular lipid membranes by free radicals. Our dietary data, taken in conjunction with pharmacokinetic data, thus suggest that a similar situation--favouring lipid peroxidation--may underlie human chronic pancreatitis.