Effect of fat on human liver selenium concentration.

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Abstract: Liver samples from 94 adult men and eight fetuses were obtained at autopsy from the Helsinki region. After lyophilization, the samples were analyzed for selenium (Se) both before and after extraction of fat with hexane/isopropanol. An inverse exponential relationship (R2 = 0.63) existed between unextracted adult liver Se concentration and the corresponding liver fat concentration. The relationship ceased to exist when Se was determined on the defatted tissue. The mean defatted adult liver Se concentration, 16.8 microM/kg dry wt, was significantly higher (p less than 0.001) than that of unextracted samples, 12.1 microM/kg. The Se concentration of fetal liver was not affected by the fat extraction. An age relationship (p less than 0.01) was found between subjects under 25 y and those over 40 y when the Se concentration was expressed per unextracted liver tissue but when expressed per defatted liver tissue the difference between age groups widened to comprise subjects over 60 y. Hepatic fat (mean Se concentration 2.7 microM/kg) thus constitutes a diluting factor. We conclude that the Se concentration of fatty human liver results in an underestimation of the selenium status of subjects who have an unphysiologically high liver fat concentration.

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