Effects of Single Oral Doses of Flavonoids on Absorption and Tissue Distribution of Orally Administered Doses of Trace Elements in Rats

Abstract

Many flavonoids have the capacity to modulate the activity of drug metabolizing enzymes and transporters, thus raising the potential for alterations in the pharmacokinetics of drugs and other essential elements. The present study evaluates the effect of single supraphysiological orally administered doses of silibinin, epigallocatechin gallate (EGCG), quercetin and rutin on the absorption and tissue distribution of orally administered doses of the trace elements zinc copper and iron in rats. Thirty rats were allocated into 5 groups treated as follow: 1st group treated with olive oil, served as control; the other 4 groups were administered orally single doses of either silibinin, EPGC, quercetin or rutin, after 2 hr a solution contains sulphate salts of zinc, copper and iron was administered orally. The animals were sacrificed, blood samples, tissues of brain, kidney and liver were obtained for evaluation of the plasma and tissues concentrations of Zn, Cu and Fe using atomic absorption spectrometry. All four flavonoids decreased serum and tissues concentrations of the trace elements compared with control. In conclusion, concomitant administration of single doses of Zn, Cu and Fe with supra-physiological doses of the flavonoids silibinin, EGCG, quercetin and rutin significantly decreases serum and tissue levels of these trace elements.