

Contribution of lead from calcium supplements to blood lead.

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Abstract

We conducted a case-control study to determine the contribution of lead to blood from consumption of calcium supplements approximating the recommended daily intakes over a 6-month period. Subjects were males and females ages 21 to 47 years. They were subdivided into three groups. One treatment group (n = 8) was administered a complex calcium supplement (carbonate/phosphate/citrate) and the other treatment group (n = 7) calcium carbonate. The control group (n = 6) received no supplement.

The lead compositions of the supplements were completely different from those of the blood of the subjects, allowing us easily to estimate contribution from the supplements.

The daily lead dose from the supplements at 100% compliance was about 3 microg Pb. Lead compositions for the complex supplement showed minimal change during treatment compared with pretreatment.

Lead isotopic compositions in blood for the calcium carbonate supplement showed increases of up to 0.5% in the (206)Pb/(204)Pb ratio, and for all isotope ratios there was a statistically significant difference between baseline and treatment ($p < 0.005$). ***There are significant changes in the amount of lead in blood arising from the calcium carbonate supplement.*** Because calcium carbonate is overwhelmingly the most popular calcium supplement, the changes we have observed merit further investigation. In addition, this type of study, combined with a duplicate diet, needs to be repeated for children, whose fractional absorption of lead is considerably higher than that of adults.