Evaluation of Allicin for the Treatment of Experimentally Induced Subacute Lead Poisoning in Sheep

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Abstract Garlic (Allium sativum) is known to reduce lead toxicity in some species of animals. The objective of this study was to evaluate the efficacy of allicin, one of the most active components of garlic, in the treatment of subacute lead intoxication in sheep. Nine female sheep weighing 25–29 kg orally received a daily dose of 80 mg/kg body weight of lead acetate for 5 days. The animals were then assigned into two groups. Group 1 did not receive any further treatment and was used as the control group and group 2 was treated orally by 2.7 mg/kg body weight of allicin twice daily for 7 days. Within one day following allicin treatment, group 2 blood lead levels were significantly lower than that in group 1 (mean of 616.9 µg/l and 290.02 µg/l, respectively; P < 0.05). Also, allicin treatment significantly reduced kidney lead content and considerably reduced bone and ovary lead contents. These results suggest that allicin might have some therapeutic effects on lead poisoning.

Keywords Allicin · Lead poisoning · Sheep · Lead chelation · Tissue lead content

Introduction

Lead, a non-biodegradable heavy metal, without any biological roles, is well known as a highly toxic agent to both humans and animals. Amongst heavy metals, lead also ranks as one of the most serious environmental pollutant all over the world which is incriminated in accidental poisoning of livestock. Animals are exposed to lead from numerous sources. The common sources of lead poisoning for ruminants are lead-bearing paints, discarded batteries, and used crankcase oil and pastures contaminated by exhaust of automobiles [1].