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Effects of chelating agents on protein, oil, fatty acids, and minerals in soybean seed

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ABSTRACT

Soybean seed is a major source of protein and oil for human diet. Since not much information is available on the effects of chelating agents on soybean seed composition constituents, the current study aimed to investigate the effects of various chelating agents on soybean [(*Glycine max* (L.) Merr.)] seed protein, oil, fatty acids, and mineral concentrations. Three chelating agent [citric acid (CA), disodium EDTA (DA), and Salicylic acid (SA)] were applied separately or combined with ferrous (Fe^{2+}) ion (CA + Fe, EDTA + Fe, and SA + Fe) to three-week-old soybean plants. After application, the plants were allowed to grow until harvest maturity under greenhouse conditions. The results showed that CA, DA, SA, and Fe resulted in an increase of oleic acid from 13.0% to 33.5%. However, these treatments resulted in a decrease of linolenic acid from 17.8 to 31.0%. The treatments with CA and SA applications increased protein from 2.9% to 3.4%. The treatments DA + Fe and SA + Fe resulted in an increase in oil from 6.8% to 7.9%. Seed macro- and micro-elements were also altered. The results indicated that the CA, SA, DA, and Fe treatments can alter seed protein, oil, fatty acids, and mineral concentrations. Further studies are needed for conclusive results.

KEYWORDS

Chelating Agents; Fatty Acids; Minerals; Oil; Protein; Soybean Seed Composition

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