

## Abstract

Continued environmental exposure to cadmium, one of the most renowned heavy metal pollutants with no known beneficial effect to man and plant has continued to draw major attention from many researchers world over. In this study, the effect of cadmium contamination on some of the biochemical activities of a viable germinating seed using *Vigna unguiculata* L. (Cowpea) seeds was reported. Cowpea seeds were treated in solution containing varying concentration of cadmium chloride ( $\text{CdCl}_2\text{H}_2\text{O}$ ) by inhibitions. The concentrations of cadmium (Cd) in the solutions used for treatment were 0, 0.8, 8, 40, 100 and 180 ppm. The chlorophyll and protein content of the shoot and that of the cotyledon were estimated in the seedlings. The phosphorylase and amylase activities in the cotyledons were measured at specific germination time until 120 hours germination time. Results showed that cadmium exhibited inhibitory effect on the enzymes activities (especially at the onset of germination). There were decrease in the ratio of chlorophyll "a" to "b" and a decrease in the long and short wavelength form of chlorophyll "a", with increasing cadmium concentration. Protein content in the cotyledon showed no significant change between 0 and 18 ppm cadmium (ca. 27mg/g), while at 40 ppm and above, there was an increase to about 48mg/g with no linear change as concentration increased. The protein content of the shoot also followed similar pattern with no significant change between 0 and 18 ppm (ca. 13mg/g) and then a sharp increase at 40 ppm (ca. 22mg/g). There were however no apparent growth at 100 and 120 ppm. The ration of the protein content in cotyledon to shoot was 2:1. Cadmium contamination of seeds for cultivation purposes seems biochemically detrimental to germination and survival of the seedlings when a concentration of 40 ppm is reached.

**Keywords:** Cadmium, cowpea, protein, chlorophyll, phosphorylase, amylase.