

The Allelopathic Impact of Psidium Guajava L., Leaf Extracts on the Germination and Growth of Cassia occidentalis L., Seeds

Abstract

Weeds have been termed plant pests because of the damage they have imposed on plants. The use of synthetic chemicals to control weeds has elicited doubts amongst various stakeholders because of environmental pollution and increased weeds resistance to them. Allelopathy, an interaction in which one plant causes suffering to another, has been considered environmental friendly method to control weeds and enhance crop production. Green fresh and brown dry Psidium guajava leaf extracts were used to investigate P. guajava allelopathic potential against seeds germination and growth of Cassia occidentalis. The leaves were concentrated at 20%, 10% and 5% for each category with distilled water being used as control. The experiment was replicated four times in a germination chamber. The green fresh and brown dry leaf extract both exhibited significant inhibition on seed germination ($F(3,12)=44$ $p=0.001$) and ($F(3,12)=50.9$ $p=0.02$), shoot length $F(3,12)=52$ $p=0.002$) and ($F(3,12)=120$ $p=0.002$) and root length elongation ($F(3,12)=129$ $p=0.001$) and ($F(3,12)=209.1$ $p=0.002$) respectively on C. occidentalis. A Post Hoc analysis reveal that inhibition was more pronounced at higher concentrations, 10% and 20% concentration, and the effect increased with an increase in concentration. A comparison between the two leaf extracts revealed that the brown dry leaf extract had more inhibition than green fresh extract at 20% concentration. Therefore, P. guajava leaves have a strong phytotoxic effect against C. occidentalis.

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