



## ALLELOPATHIC EFFECT OF DIFFERENT CONCENTRATION OF WATER EXTRACT OF *ZINGIBER ZERUMBET* AGAINST THE GERMINATION OF *CICER ARIETINUM* WITH A SPECIAL ATTENTION TO ASSESS VARIATION IN PERCENTAGE OF CHEMICAL CONSTITUENTS AFTER GERMINATION

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**ABSTRACT:** This study is an attempt to assess the allelopathic effect of different concentration of water extract of shampoo ginger (*Zingiber zerumbet*) on early seed growth parameters of Bengal gram (*Cicer arietinum*). For this study, laboratory experiments were conducted at 25°C room temperature and to evaluate the allelopathic effect of the water extract of *Zingiber zerumbet* on the germination of seeds and length of seedlings of *Cicer arietinum*. The allelopathic potentialities of the rhizome extract of *Zingiber zerumbet* decreases the seed germination of *Cicer arietinum* with increasing the concentration of extracts. The maximum percentage of germination was recorded at control condition as compared to all other conditions. The minimum percentage was recorded in 100% concentration of the extract of rhizome. The conclusion of present study showed that inhibitory effect of the extract of ginger rhizome may be due to the presence of various allelochemicals.

**Key words:** Allelochemicals, Chemical Constituents, Shambboo Ginger

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The term allelopathy refers to any process involving secondary metabolites (allelochemicals) produced by plants, microorganisms, viruses and fungi that negatively or positively influence the growth and development of any biological systems. In other words Allelopathy is a mechanism in which chemicals produced by some plant species may increase or decrease the associated plant growth (Jabeen and Ahmed, 2009). The earliest writing on allelopathy are attributed to Theophrastus (300 B.C), who noticed that harmful effect of Cabbage on a Vine and suggested that such effects were caused by "Odours" from cabbage plant (Willis., 1985). The significance of allelopathy in biological regulate of weeds and the productivity of crops has been extremely recognized and several techniques have been suggested to know the allelopathic activities (Fujii *et al.*, 2004; Taiwo and Makinde, 2005; Terzi, 2008). Allelopathic determine of medicinal species is of peculiar attention in modern years (Han *et al.*, 2008; Li *et al.*, 2009).

## MATERIALS AND METHODS

### Plant material

The fresh rhizome of shampoo ginger (*Zingiber zerumbet*, family, *Zingiberaceae*) was procured in the month of July 2017 from the Campus of Mahatma Gandhi College, Thiruvananthapuram, Kerala. Just after procurement, the rhizome was ground mechanically into small pieces for use in the study.

### Preparation of extract and Preparation of Test concentration of extract

Freshly collected rhizome was extracted with the help of mixer grinder. The pure extract is used for the preparation of different concentration of extract. Water was used for the preparation of different concentration of extract. Stock extracts were diluted with water to get different concentrations of 5%, 10%, 25%, 100%, in addition to this a control was also maintained.

### Collection and preparation of seeds

Healthy uniform seeds of gram (*Cicer arietinum* L., family: Fabaceae) were purchased and used for the experiment. The seeds were soaked in water for about two hours before sowing to the cotton. For the experiment in pure extract, the seeds of Bengal gram