

TOXIC IMPACT OF SEVEN FOOD ADDITIVES ON GERMINATION, GROWTH, & CELL DIVISION

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ABSTRACT

Food materials now available to us in the market are not pure as we have been thinking traditionally. It contains numerous food additives which are toxic and thereby harmful to our body system. Food preservatives, emulsifiers, anticaking agents, artificial dyes, flavour enhancers, essence, artificial sweeteners etc are added to food. Seven food additives such as Aspartame, MSG, SMB, Sodium Benzoate, Sodium Citrate, Sodium Nitrate and Saccharin were evaluated for their toxicity. Aspartame and Saccharin are artificial sweeteners, SMB, Sodium Citrate, Sodium Nitrate and Sodium Benzoate are food preservatives and MSG is a flavor enhancing agent. Both phytotoxic and cytotoxic impacts of these food additives were evaluated. The effects of artificial food additives on germination, growth and cell division were studied. The study revealed that they cause decrease in percentage of germination, speed of germination, and the average growth rate of *Vigna radiata* (L.) R. Wilczek. (Green gram) and *Vigna unguiculata* (L.) Walp. (Red gram), when treated with different concentrations

(0.1%, 0.2%, 0.3%, 0.4%, & 0.5%). Mitotic index and percentage of abnormality in *Allium cepa* L. root tips treated with the same concentrations were evaluated. Cytotoxic studies showed chromosome stickiness at Metaphase and Anaphase, Chromosome bridges, lagging of chromosome, Nuclear lesions, Nuclear disintegrations, Bi-nucleate cells, Nuclear extrusion, Tropokinesis etc. These observations indicated that these food additives are Mitostatic, Clastogenic and mutagenic. Analysing the results, it was found that these artificial food additives are toxic. Thus the results link consumption of artificial food substances with the reduction in growth, thereby calling a reassessment of massive usage of artificial food additives. It is too late to have the interference of public health authorities in the sensitive and critical issue as it is essential to have a healthy younger generation for a healthy populace of tomorrow.

KEY WORDS: Food additives, Aspartame, *MSG*, *SMB*, *Saccharin*, *Sodium Benzoate*, *Sodium Citrate*, *Sodium Nitrate*, Phytotoxicity, Cytotoxicity.