Inhibition of Mutation in S. typhimurium and Cell Division in Allium cepa by Zyflamend, C. longa, Z. officinale, A. indica, and M. citrifolia and Possible Implications in Cancer Prevention

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The purpose of this project was to see if natural substances can be used to prevent mutation. With the recent discovery of aspirin as a cancer preventative, many have reverted to daily use of aspirin, but aspirin has serious side effects, such as gastrointestinal damage; therefore, natural preventatives for cancer are necessary. Five natural samples were used: turmeric, ginger, neem, noni, and Zyflamend (a drug consisting of turmeric and ginger). These substances were used with S.Typhimurium, and allium cepa (onion). The researcher hypothesized that with both organisms, Zyflamend would act as the best preventative. In the prokaryotic part of the experiment, bacteria was grown with a substance and a mutagen and observed to see if DNA damage was caused. If the bacteria was caused DNA damage, the bacteria would increase its activity to repair its damage and release a blue coloring. The absorbance of the blue color released as well as the rate of bacterial growth were measured. All of the substances were effective, but noni and aspirin were very efficient in preventing DNA damage. Aspirin had a 91% of inhibition, while noni had a 73% of inhibition of the mutation. In the eukaryotic part of the experiment, onions were grown with one of the samples and a mutagen. The onion roots were cut and made into an onion root tip squash. This was examined under the microscope for stages of mitosis. The researcher took 20 pictures of each root and examined each for cells in mitosis to calculate the mitotic index. Cells grown with noni showed the lowest mitotic index leading to less of a chance for mutation. Overall, all the data shows that noni and aspirin have potential as cancer preventatives. By using noni instead of aspirin, individuals can prevent cancer without harming the body.

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