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SHORT COMMUNICATION

Chromosomal effects induced by potassium bromate on *A. sativum* root tips.

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Food additives are the substances that are added to food in order to prolong the shelf-life of the food's factories by inhibiting the development of microorganisms such as bacteria and fungi. Some other purposes including coloring, flavoring, sweetening and thickening are also targeted of the food additives. Potassium bromate is one of the chemicals that extensively used as a food additive. Plenty of countries, mainly in South East Asia are using potassium bromate as flavor enhancer in food products. Potassium bromate is a chemical additive mixed in flour to improve the dough, rising the volume of the bread and hold its shape, subsequently, humans are daily exposed to these chemical substance.

Potassium bromate it is not a naturally occurring and can be produced by passing bromine into a solution of potassium hydroxide. KBrO3 is generated as a contaminant in drinking water due to conversion of bromide found naturally in water to bromate by ozone which is used as disinfectant. Potassium bromate under the right conditions will be completely used up in the baking bread. However, if too much is used, or the bread is not cooked long enough or at high enough temperature, then residual amount will remain. This residual amount of potassium bromate is undesirable. Bromate is an oxidizing improver which acts slowly and throughout the dough fermentation, and has two primary effects. Firstly, it enables loafs with high volume qualities to be produced from the low protein wheat. Secondly, it helps to produce bread with fine crumb structure. Potassium bromate is a highly reactive substance which rapidly breaks down to the inactive bromide during dough fermentation and baking and it was always considered that breakdown was complete.

The Food and Drug Administration (FDA) indicate that 20 parts per billion or less of potassium bromate is safe. Potassium bromate in bread and baked food as low 5ppb (ng/g) can be detected using liquid chromatography. With the great increase in the use of food additives, there also has emerged considerable scientific data linking food additive intolerance with various physical and mental disorders, particularly with childhood period. This bioaccumulation if continued for a long time can become cytotoxic and can offset the biochemical equilibrium of the delicate human system or cause some genomic disruptions in the cells of the human system. The genomic disruptions which are damaging to the DNA could range from point mutation to chromosomal mutations. Different biological assays were used to investigate the geno-toxic effects of some chemical, *Allium sativum* (Garlic) is a commonly used as a suitable genetic model for cytological studies. In general, Allium test is an efficient cytological model for chromosome aberration and mitotic activity assay of different factors. The goal of this study was to evaluate the cytogenic activity of potassium bromate on *Allium stavium* chromosomes.

Recent studies have proven that long-term exposures to food additives might be associated with increases in the rates of some genetic diseases and the development of some types of cancer. In addition to systemic toxicity, the possible genotoxicity of food additives has been investigated in recent years. thus, in this study we aimed to evaluate the genotoxicity of KBrO3,using a chromosomal aberration assay and to determine their effect on the mitotic index of *Allium sativum*. In conclusion, KBrO3 was found to be genotoxic due to inhibition of MIs and induction of chromosome aberrations in Allium test. Our results revealed that plant test systems are reliable genetic model to detect the genotoxicity due to their sensitivity to apply. This investigation is also in agreement with several previous studies suggesting that more care is needed to manage the use of KBrO3 as food additives in our country where it is widely used