

Evaluation of the Genotoxic Effects of Monopotassium Glutamate In Human Lymphocytes *in vitro* By Sister Chromatid Exchange Test

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Aim of the study: The steady decline in natural resources has the potential to create a variety of problems, especially in the food and health areas. One of them is increased use of additives in foods. Flavour enhancers are a kind of food additive and their usage are increasing rapidly. They are used in many prepared foods for commercial purposes. Glutamic acids are used as a flavour enhancer commonly. Monopotassium glutamate (MPG) is a potassium salt of glutamic acid. The purpose of this study was to evaluate the potential genotoxicity of MPG by using *in vitro* sister chromatid exchange test in human lymphocytes.

Material and Methods: Peripheral blood obtained from three healthy young donors, a man and two women, was treated with four different concentrations (125, 250, 500, and 1000 µg/mL) of MPG in culture conditions for 24 and 48 h. A negative and a positive control (mitomycin-C) were also applied for each treatment. Replication index was also determined.

Results: According to this test results, MPG significantly increased the SCE/cell ratio at all the concentrations for both 24 h and 48 h periods compared with the negative control. However, MPG did not affect replication index. In our previous study, MPG significantly increased the frequency of micronucleus in the two highest concentrations compared to negative control. These data demonstrated that MPG may have genotoxic risk to human lymphocytes *in vitro* at high concentrations. However, there is a need to be done other genotoxicity tests for this food additive to support these results.

Keywords: Genotoxicity, Food additive, Human lymphocytes, Sister chromatid exchanges.