

【P-16】**Genotoxic effects of diesel exhaust particle extract in NIH/3T3 cells using alkaline single cell gel electrophoresis**

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Total diesel exhaust particle (DEP) is known to be probably carcinogenic (IARC group 2A). DEP contains organic compounds such as polyaromatic hydrocarbon(PAH), heterocyclic compounds, phenols, and nitroarenes. An alternative mechanism by which DEP could be carcinogenic is known by the generation of oxidative DNA damage. Reactive oxygen species(ROS) are generated by DEP without any biological activation system.

The aim of this study was to investigate genotoxic effects of DEP using single cell gel electrophoresis. In order to evaluate the mechanisms of DEP genotoxicity, the rat microsome mediated and DNA repair enzyme treated comet assays together with routine comet assay were performed. The present study investigated the DNA damages of total diesel exhaust particle (DEP) using single cell gel electrophoresis. DEP was collected from diesel engine bus and dichloromethane extract was obtained. The organic extract of DEP revealed DNA damage itself in NIH3T3 cells. And it showed both oxidative and microsome mediated DNA damages. Vitamin C as an model antioxidant reduced DNA damage in endonuclease III treated comet assay. One of flavonoid, galangin as a CYP1A1 inhibitor reduced DNA damage in the presence of S-9 mixture. Our results show that DEP are genotoxic and a great source of oxidative stress, but antioxidants can significantly reduce oxidative DNA damages. And DEP may contain indirect mutagens which can be inhibited by CYP inhibitors.

Keyword : diesel exhaust particle, single cell gel electrophoresis, DNA damages, antioxidant, CYP1A1 inhibitor