

[Mutat. Res. 241, 283 (1990)]

Mechanism of antimutagenicity of aquatic plants extracts against benzo[*a*]pyrene in Salmonella assay.

TAKAHIKO SATO*, YOUKI OSE, HISAMITSU NAGASE, HIDEAKI KITO

The mechanism of an antimutagenicity of water extracts of grass-wrack pondweed (*Potamogeton oxyphyllus* MIQUEL), curled pondweed (*Potamogeton crispus* L.) and smartweed (*Polygonum hydrophyllum* L.) towards benzo[*a*]pyrene mutagenicity in *Salmonella typhimurium* was investigated. The antimutagenic components in the aquatic plants were water-soluble, heat-resistant and had a high molecular weight. The antimutagenic effect of the plants extracts was caused by adsorption rather than by bio-antimutagenicity or decomposition of benzo[*a*]pyrene. Chlorophyll did not play an important role.

[Mutat. Res., 244, 129 (1990)]

Inhibitory Action of Peony Root Extract on the Mutagenicity of Benzo [a] pyrene.

YOSHIMICHI SAKAI, HISAMITSU NAGASE, YOUKI OSE, HIDEAKI KITO,
TAKAHIKO SATO*, MAKOTO KAWAI and MIZUO MIZUNO

The inhibitory effects of peony root extract on the mutagenicity of benzo[*a*]pyrene (B[*a*]p) have been investigated in the *Salmonella typhimurium* reversion test. Four kinds of experiments were performed: direct chemical reaction (1) between peony root extract and B[*a*]p, and (2) between peony root extract and active metabolite(s) of B[*a*]p, (3) inhibition of metabolic processes of B[*a*]p with S9 mix, and (4) inhibition of activation on mutagenicity. Peony root extract interfered with the action of enzymes in the S9 mix, and inactivated the activity of B[*a*]p metabolites. The bio-antimutagenic effect was assayed by reversion in *Salmonella typhimurium* TA98 and TA100.

[Eisei Kagaku, 36, 304 (1990)]

Studies on the Quantitative Structure Activity Relationship of Anti-mutagenic Phenol Carboxylic Acids to Benzo[*a*]pyrene.

YOSHIMICHI SAKAI, YOUKI OSE, HIDEAKI KITO, TAKAHIKO SATO*,
HIROKAZU HASEGAWA, YOSHITADA YOSHIOKA, MAKOTO KAWAI
and IKUO MORIGUCHI

Quantitative structure-activity relationship was studied on antimutagenic phenol carboxylic acids. Antimutagenic activities of 104 compounds were examined with Ames test by using *Salmonella typhimurium* TA98 with S9 mix and benzo[*a*]pyrene. Theory of quantification I was applied to this study, and the chemical structures of compounds were classified into 3 items. It was found that 3,4,5-trihydroxy, 3,4,5-trimethoxy group and coumarin acted for enhancing antimutagenicity, while 4-aldehyde, 2-carboxy and 4-carboxy group acted for enhancing mutagenicity.