

## Anti-oxidant activities of the extracts from the herbs of *Artemisia apiacea*

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The anti-oxidant activities of the various fractions from the herbs of *Artemisia apiacea* were investigated. The n-hexane and n-butanol fractions were found to cause significant free radical scavenging effects on DPPH, their scavenging potencies as indicated in IC<sub>50</sub> values, being 230.1 and 183.7 g/ml, respectively. The n-butanol fraction exhibited a significant decrease in serum transaminase activities elevated by hepatic damage induced by CCl<sub>4</sub>-intoxication in rats. All fractions tested exhibited a lipid peroxidation causing a significant decrease in MDA production in TBA-reactant assay. The n-butanol fraction was the strongest in the increase in the anti-oxidant enzymes such as hepatic cytosolic superoxide dismutase (SOD), catalase and glutathione peroxidase (GSH-px) activities in CCl<sub>4</sub>-intoxicated rats. These results suggest that the herbs of *A. apiacea* possess not only the anti-oxidant, but also the activities in CCl<sub>4</sub>-intoxicated rats. Especially, the n-butanol extract was found to cause significant increases in the rat liver cytosolic SOD, catalase, GSH-px activities as well as a significant decrease in the MDA production

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### Assay of Human Chorionic Gonadotropin in Urine of Athletes and Evaluation of Assay Kit Performance

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Special attention has been paid to human chorionic gonadotropin (hCG) for athlete doping control because it stimulates the endogenous production of testosterone and epitestosterone without increasing the T/E ratio which is a doping indicator for the exogenous administration of testosterone. Even though the IOC banned the use of hCG, a detection method has not been decided upon since there are a variety of immunoassay kits available on the market. We evaluated three kits in terms of their performance characteristics. The assay value of the control sample varied depending on the kit, resulting in 198 mIU/ml for the MAIA kit, 172 mIU/ml for the IRMA kit, and 143 mIU/ml for the IMEIA kit. Considering the IOC inter-lab distribution of results (55 ~ 312 mIU/ml) using 27 different kits and the mean value (178±56 mIU/ml), all three kits are within the range of -15.8% ~ +5.6% of the mean value, which proves them useful for the hCG assay. The MEIA kit resulted in lower hCG values because it detects only intact hCG molecules, in contrast to the other two kits which detect intact hCG and β-hCG together. However, it is suitable for screening purposes because its advantage of being an automated system. When 123 urine samples of athletes were analyzed in 22 batches using this system, the variation of control values fell within ±10% of the mean values, and all specimens tested negative with hCG values less than the detection limit of 2 mIU/ml.

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### Analysis of Branched PEG-Conjugated Interferon Alpha by Capillary Electrophoresis and MALDI-TOF Mass Spectrometry

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Analysis of interferon alpha (IFN) modified with high molecular weight branched PEG was performed by capillary electrophoresis (CE) and MALDI-TOF mass spectrometry (MALDI-TOF MS). IFN was modified by the reaction of amine residues with an active ester of monomethoxy polyethylene glycol at various molar ratios. As a CE method, capillary electrophoresis sodium dodecyl sulfate nongel sieving (CE-SDS-NGS) was performed using an uncoated capillary filled with a hydrophilic replaceable polymer network matrix. CE-SDS-NGS showed good