

[PA1-26] [ 2003-10-10 14:00 - 17:30 / Grand Ballroom Pre-function ]

### **A Random Amplified Polymorphic DNA (RAPD) primer to assist the Identification of Panax ginseng in Commercial Ginseng Granule Products**

Shim Young Hoon<sup>o</sup>, Choi Jung-Ho, Park Chan-Dong, Lim Chul-Joo, Kim Do-Hun, Cho Jung-Hee, Kim Hong-Jin  
*College of Pharmacy, Chung Ang University, 221, Huksuk-Dong, Dongjak-Ku, Seoul, 156-756, Korea, Korea Food & Drug Administration 5 Nokbeon-Dong, Eunpyung-Gu, Seoul, 122-704, Korea*

Previously, we found the operon random primer (OP-5A) that is characteristic the genus Panax by randomly amplified polymorphic DNA (RAPD) analysis. However, OP-5A primer is limited to apply on the differentiation of only crude herbal plants. To construct more sensitive and unique primers on the genus Panax, ginseng-specific DNA profile (350 bp) that was amplified by OP-5A primer were inserted in a plasmid vector in the TA cloning method and sequenced. We designed the PCR primers (Forward: 5"-AGGGGTCTTGCTAT AGCGGAAC-3", Reverse: 5"-AGTCTTAATTTTCATATTTTCGTATG-3") and identified the unique ginseng band (350 bp) in commercial granule products including ginseng extracts as well as crude ginseng plants by nascent PCR. Therefore, these results support that ginseng-specific DNA sequence could be used as a molecular marker to distinguish ginseng extract products from others at the molecular level.

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### **Effects of $\beta$ -carbolines on Dopamine Biosynthesis and L-DOPA-Induced Cytotoxicity in PC12 Cells**

Yang Yoo Jung<sup>o</sup>, Lee Jae Joon, Kim Yu Mi, Jin Chun Mei, Yoo Seung Hee, Kang Min Hec, Lee Myung Koo  
*College of Pharmacy, Chungbuk National University*

In vivo aromatic  $\beta$ -carbolines, such as harman and norharman, may easily be formed by cyclization of indoleamines with e.g. aldehydes. Because of the structural similarity to MPTP,  $\beta$ -carbolines have been proposed as endogenous toxins. In this study, we have investigated the effects of harman and norharman on dopamine biosynthesis and L-DOPA-induced cytotoxicity in PC12 cells. Treatment of PC12 cells with harman and norharman showed 48.8% and 49.5% inhibition of dopamine content at a concentration of 20  $\mu$ M and 100  $\mu$ M for 48 h. The IC<sub>50</sub> values of harman and norharman were 18.8  $\mu$ M and 96.7  $\mu$ M, respectively. Next, the intracellular mechanism of harman and norharman were examined. tyrosine hydroxylase (TH) activity decreased at 6 h maintained for up to 48 h and then recovered to the control level at about 72 h after exposure of PC12 cells to 20  $\mu$ M harman and 100  $\mu$ M norharman. Under the same conditions, TH mRNA level and intracellular Ca<sup>2+</sup> concentration also decreased by harman and norharman. Treatment with harman and norharman at concentrations higher than 100  $\mu$ M and 200  $\mu$ M caused a cytotoxicity in PC12 cells. Harman at 20-150  $\mu$ M and norharman at 100-300  $\mu$ M enhanced L-DOPA-induced cytotoxicity (L-DOPA concentrations, 20-100  $\mu$ M). These results suggest that harman and norharman contribute to the decrease in dopamine content by the inhibition of TH activity, the regulation of TH gene expression, the reduction of intracellular Ca<sup>2+</sup> concentration, and stimulate L-DOPA-induced cytotoxicity at higher concentrations in PC 12 cells.

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### **C/EBP $\beta$ mediated inhibition of PAH-inducible CYP1A1 expression by Oltipraz, a cancer chemopreventive agent**

Cho Il Je<sup>o</sup>, Kim Sang Geon

*National Research Laboratory, College of Pharmacy and Research Institute of Pharmaceutical Sciences, Seoul National University, Seoul 151-742, Korea*

Oltipraz, a cancer chemopreventive agent, induces CYP1A1 to a certain extent by transactivation of the gene via the Ah receptor (AhR)-xenobiotic response element (XRE) pathway. Previously, we showed that oltipraz promoted CCAAT/enhancer binding protein  $\beta$  (C/EBP $\beta$ ) activation, which leads to the induction of glutathione S-