

## Pharmacokinetics and biodistribution of a small radioiodine labeled nerve growth factor fragment

Kyung-Ho JUNG,\* Dong-Hyun KIM,\* Jin-Yung PAIK,\* Bong-Ho KO,\* Jun-Sang BAE,\*  
Yeom Seong CHOE,\* Kyung-Han LEE\*\* and Byung-Tae KIM\*

*\*Department of Nuclear Medicine and \*\*Center for Molecular Imaging,  
Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea*

Nerve growth factor (NGF) exerts various actions on neuronal and non-neuronal tissues and has potential therapeutic utility, but difficulties in using the whole protein have stimulated interest in small NGF fragments. We radioiodinated a small cyclic peptide derived from NGF using the Bolton-Hunter method [ $^{125}\text{I}$ -C(92-96)], and confirmed binding to high affinity NGF receptors by cross-linkage analysis. Pharmacokinetic characteristics in intravenously injected mice were  $T_{1/2\alpha}$  5.2 min,  $T_{1/2\beta}$  121.3 min, clearance  $11.8 \pm 0.5$  ml/min, and volume of distribution  $69.7 \pm 4.6$  ml. Dose-proportionate increases in areas-under-curve and peak-concentrations indicated linear pharmacokinetics. Biodistribution data revealed that clinically relevant doses allowed C(92-96) accumulation sufficient to elicit biological responses in receptor expressing organs including the lungs, liver, spleen, and pancreas.

**Key words:** nerve growth factor, peptide, radioiodine, pharmacokinetics, biodistribution