

Investigation of role of catecholamine metabolism in blood pressure regulation using chemiluminescence reaction detection

Makoto Tsunoda

(Graduate School of Pharmaceutical Sciences, The University of Tokyo)

Catecholamines, norepinephrine, epinephrine and dopamine, play important roles as neurotransmitters and hormones, and have an important role in blood pressure regulation. Catecholamines are metabolized by catechol-*O*-methyltransferase (COMT) and monoamine oxidase, and inactivated. Catecholamines have been reported to be important as a cause of hypertension. However, there is no report concerning the research between the metabolism of catecholamines and blood pressure regulation.

Norepinephrine, epinephrine and dopamine are metabolized by COMT to normetanephrine, metanephrine and 3-methoxytyramine, respectively. To investigate the roles of catecholamines and their 3-*O*-methyl metabolites in blood pressure regulation, we have developed highly selective and sensitive determination methods for catecholamines and their 3-*O*-methyl metabolites with high-performance liquid chromatography-peroxyoxalate chemiluminescence reaction detection. The developed methods are applicable to the measurement of catecholamines and their 3-*O*-methyl metabolites in as little as 20 microliters of mouse, rat or human plasma. Using the developed method, we have found that the inactivation of catecholamines was blunted in hypertensive rats *in vivo*.