Genetic Polymorphism of Catechol-O-Methyltransferase in Korean and its Clinical Implications on Antiparkinson Drug Therapy

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To evaluate the distribution profile of COMT activity in red blood cell in Korean population, we recruited 340 healthy volunteers of 20−40yrs, 96 of older than 40yrs and assayed COMT activity by radiochemical method. To evaluate the contribution of COMT activity in vitro to the metabolism of L-dopa in vivo, we measured L-dopa and 3-OMD plasma concentration of 73 parkinsonian patients as well as their COMT activities. The change of COMT activity of chronic L-dopa administration to parkinsonian patients was followed up additionally.

As results, mean COMT activity in young(20−40yrs) healthy Korean population was 9.4± 4.7 regardless of sex or smoking. Their phenotypic profile was comprised of 35% high, 48% middle, 17% low activity groups. As for high activity phenotype, Korean had higher proportion than American White(23%) and lower than American Black(17%). Notwithstanding the previous reports of other ethnic groups, COMT activity in Korean adults was positively correleated with their ages. COMT activity was well correlated with 3-OMD concentration in parkinsonian patients, implying the significant contribution of RBC COMT activity on L-dopa metabolism in vivo. No induction or inhibition of COMT activity by L-dopa administration was observed in spite of maximum 5 months follow up.