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The Plasma Levels of Dopa and Catecholamines after Oral Administration of L-Dopa

L-3,4-Dihydroxyphenylalanine (L-dopa) has been used recently as an effective drug for Parkinson's disease. The administered L-dopa was said to be converted to dopamine in brain by L-aromatic amino acids decarboxylase [EC 4.1.1.26].¹⁾ The urinary metabolites of L-dopa have been analysed by many investigators after oral administration to the patients.²⁾ On the other hand, only the plasma levels of dopa have been measured by isotopic³⁾ and fluorometric⁴⁾ methods and those of dopa and its metabolites have not been estimated simultaneously.

The patients who had been administered with 3 g of L-dopa per day were stopped with the treatment and, after a period of twelve hours, were orally administered with 1 g of the drug. The procedure of the preparation of the samples from plasma was the same as in the previous

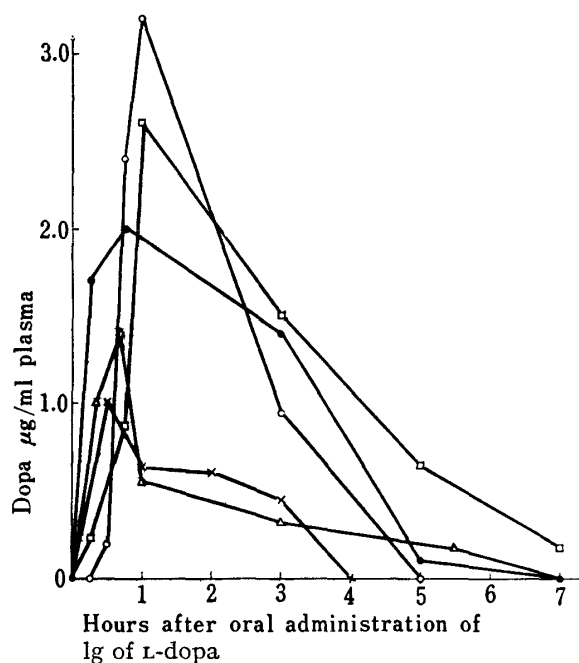


Fig. 1. Plasma Level of Dopa

—○—: patient S.K. —●—: patient H.G.
—×—: patient K.H. —△—: patient S.T.
—□—: patient S.O.

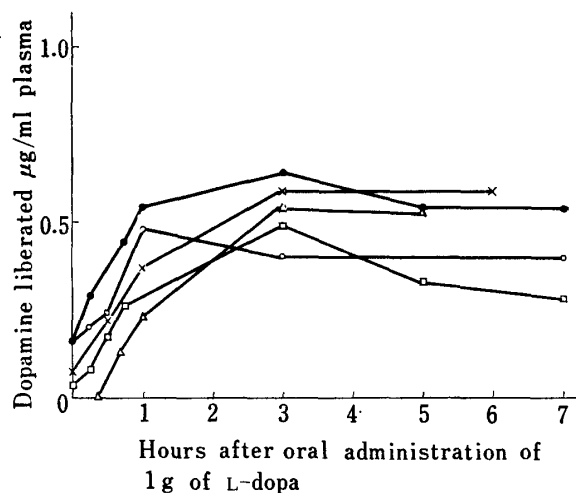


Fig. 2. Plasma Level of Dopamine liberated after Acid Hydrolysis

—○—: patient S.K. —●—: patient H.G.
—×—: patient K.H. —△—: patient S.T.
—□—: patient S.O.

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communication.⁵⁾ The determination of dopa and catecholamines was achieved by gas chromatographic method.⁶⁾

As shown in Fig. 1 and 2, the plasma levels of dopa increased to the top within an hour, then rapidly decreased while that of conjugated dopamine⁵⁾ increased gradually and retain its higher level for a few hours. The dopa seems to exist mainly in a free form because of the unchanged value after acid hydrolysis⁵⁾ (100°, 20 min in 0.4N perchloric acid).

Epinephrine and norepinephrine were not detected (less than 20 ng/ml of plasma) from the plasma.

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