α-AMINOADIPIC ACID IN ARGININE FORMATION*

Sirs:

In a previous study we had shown that arginine may be synthesized by the transfer of the amino group of glutamic or aspartic acid to citrulline.[1] Since lysine was also active, it was suggested at the time that it was first converted to glutamic acid which then aminated citrulline. However, experiments in liver homogenate with lysine labeled in the ε position with C^{14} showed that a radioactive dicarboxylic acid was formed. This excluded glutamic acid formation by oxidative removal of the radioactive carbon. α-Aminoadipic acid has now been shown to be very probably the product of the reaction.[2] α-Aminoadipic acid has been shown to be active in transamination by Braunstein,[3] who interpreted our results with lysine as being due to its conversion to this dicarboxylic acid.

Approximately 10 mg. (fresh weight) of rat kidney slices in 4 ml. of Krebs' bicarbonate Ringer's solution; 22 mg. per cent of citrulline in each vessel. Temperature, 38°; time, 1 hour.

Metabolite	Increase in arginine, mg. per gm. fresh tissue per hr.
DL-Glutamic acid (18.5 mg. %)	1.9
DL-α-Aminoadipic acid (20 mg. %)	0.9
DL-Lysine dihydrochloride (27.5 mg. %)	0.3

The experiment presented in the table shows that α-aminoadipic acid can aminate citrulline, and that the relative reaction rates are compatible with the hypothesis that lysine is converted into α-aminoadipic acid.

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[1] Borsook, H., and Dubnoff, J. W., *J. Biol. Chem.*, **141**, 717 (1943).

[2] Borsook, H., Deasy, C. L., Haagen-Smit, A. J., Keighley, G., and Lowy, P. H., *J. Biol. Chem.*, **173**, 423 (1948).

[3] Braunstein, A. E., in Anson, M. L., and Edsall, J. T., Advances in protein chemistry, New York, **3**, 40 (1947).