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Distribution of amino acids in the body.By **DONALD D. VAN SLYKE** and **GUSTAVE M. MEYER.**[*From the Rockefeller Institute for Medical Research.*]

In a recent paper (*Journ. Biol. Chem.*, Sept., 1912) we have shown by direct determinations (nitrous acid method) of the amino acid nitrogen of the blood, that during the digestion of protein amino acids pass from the alimentary canal into the blood. The amino acid nitrogen reaches only a relatively low concentration in the blood (3-5 mg. per 100 c.c. after 24 hours fast, 10-12 mg. during digestion), because, as was found after intravenous injection of alanine, the amino acids are either destroyed or removed with great rapidity by the tissues. The object of the present work was to obtain direct proof, by analysis of the tissues themselves with the nitrous acid method, as to whether the amino acids disappear from the blood as the result of destruction, of synthesis to more complex compounds, or of mere concentration in the tissues. The last explanation is the correct one. The tissues (muscle, liver, kidney, spleen, pancreas) contain, stated very roughly, about ten times the amount of amino acid nitrogen, per 100 grams, that is found in the blood. The amount varies in the different tissues, the brain being especially low, but about the same order of magnitude in this respect appears to be normally maintained among the different organs. Amino acids injected into the blood, or absorbed during digestion, are immediately taken up by the tissues; but the removal, although rapid, is never complete, equilibrium being reached and maintained between blood and tissues respectively. The means by which the amino acids are held in the tissues appear to be physical rather than chemical; for the acids can be extracted by even cold water or dilute alcohol. The fact that the amino acids are many times more concentrated in the tissues than in the blood excludes osmosis as an explanation. The facts thus far known are consistent with the assumption that the amino acids are taken up from the blood and held in the tissues by adsorption, chemical transformation of the adsorbed amino acids following later. This transformation occurs much more rapidly in the liver than in the muscles.