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The Production of Kynurenic Acid from Tryptophane and Indole Derivatives

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The growth of nurslings of mothers on this ration was unsatisfactory and mortality was high. When the mothers were given in addition 3 gm. of raw or 0.9 gm. dried liver daily the growth rate of the young was increased and mortality was low. An extract of autolyzed liver and an alcoholic extract of powdered skim milk were less effective in improving the ration. A carefully prepared alcohol extract of dried liver apparently supplied the deficiency.

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THE PRODUCTION OF KYNURENIC ACID FROM
TRYPTOPHANE AND INDOLE DERIVATIVES

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The production of kynurenic acid from derivatives closely related to tryptophane serves as a means of indicating whether the animal organism is able to accomplish the changes necessary to convert such derivatives into tryptophane itself, or into some product intermediate in the transformation of tryptophane to kynurenic acid. With this in mind, a number of *l*-tryptophane and indole derivatives were prepared and administered to rabbits, both *per os* and subcutaneously, in amounts molecularly equivalent to 1 gm. of tryptophane and the kynurenic acid produced was estimated.

Two types of *l*-tryptophane derivatives were employed, tryptophane amides (the free amide, the mono-ethyl and the di-ethyl amides, the analide, and the ethyl anilide) and substituted carbonic acid derivatives of tryptophane (carbomethoxy, carboethoxy, carbopropoxy, carbophenoxy, and carbobenzoxy). Of the former all were as efficient as free *l*-tryptophane in producing kynurenic acid; of the latter none underwent conversion.

Of the several indole derivatives prepared and tested (β -3-indoleacrylic acid, α -oximino- β -3-indolepropionic acid, *l*-, and *dl*- β -3-indolelactic acid, and β -3-indolepyruvic acid), only the β -3-indolepyruvic acid and the *dl*- β -3-indolelactic acid yielded kynurenic acid. The amount isolated after the administration of these two

derivatives was much smaller than that from an equivalent amount of *l*-tryptophane. This suggests that the compounds are probably not intermediates in the conversion of tryptophane to kynurenic acid.

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