years ago from animals dying of MV poliomyelitis, also protected hamsters. This led to the testing of Seitz and Berkfeld "N" filtrates of 10 per cent. suspensions of feces collected from human cases of poliomyelitis. Duplicate portions of the filtrates were heated for 1 hour at 60° C. and the feces of newborn infants and presumably uninfected children were also tested. The results of representative experiments have been summarized in the accompanying table.

The procedure seems to afford a satisfactory means of investigating the interference phenomenon in poliomyelitis. The results are sufficiently definite to permit the use of small groups of inexpensive animals and the test period is relatively brief. Whether the procedure is useful in demonstrating the presence of poliomyelitis virus, as in feces where other interfering viruses probably do not occur, requires investigation.

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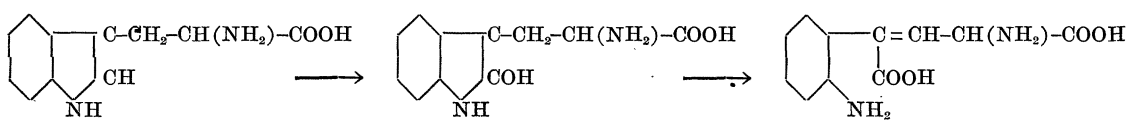
THE TRYPTOPHANE CONTENT OF a^+a^+ and aa EPHESTIA KÜHNIELLA Z.[1]

IT has been shown that in Ephestia homozygous for the gene *a* and in Drosophila homozygous for the gene *v* the lack of pigmentation of the eyes and other organs is due to lack of a specific diffusible substance necessary for the formation of these pigments.[2, 3] This substance has turned out to be kynurenin, a derivative of tryptophane.[4] The oxidation of tryptophane to kynurenin proceeds according to Kotake in the accompanying formula.



tryptophane α-hydroxytryptophane kynurenin

From the observation that α-hydroxytryptophane has a similar though slighter effect than kynurenin itself, it has been concluded that the genes *a* and *v* in homozygous condition inhibit the oxidation of tryptophane in the α position.[5] This is, however, not the only possible explanation for lack of kynurenin. Any mechanism breaking down tryptophane in a different way or removing kynurenin in a way so that it can not be used for the formation of pigment would have the same effects. In order to obtain evidence bearing on this question, tryptophane determinations in Ephestia homozygous for *a* and for the corresponding wild type allele a^+ have been undertaken.

Ephestia imagoes were crushed in a mortar and dried in a desiccator over concentrated H_2SO_4. After three days, the dry material was pulverized in a mortar and kept in a dessiccator in the dark until used. In some samples, males and females were kept separately, whereas in other samples specimens of both sexes were used together. Samples of these powders were extracted over night (14 to 16 hours) in 10 per cent. NaOH in a water bath at $56 \pm 2°$ C. The fluid was decanted, the solid washed once with 10 per cent. NaOH, and the washing fluid added to the first solution. The amount of tryptophane in the solution was determined with glyoxylic acid.[6] The developing color was read with an electric colorimeter. In a few instances, tryptophane was determined with p-dimethylaminobenzaldehyde after acid hydrolysis at 37° C.[7] In these cases, the color was determined with a Dubosq colorimeter. The results obtained are indicated in Table I.

In the a^+ a^+ animals, the males contain significantly more tryptophane than the females ($t = 4.08$, $n = 20$, $P < .01$). This is different from the findings of Demyanovskii[8] in *Bombyx mori*, where the females had consistently higher amounts of tryptophane than the males. The difference in tryptophane content between the two sexes in the *aa* race is in the same direction, but insignificant ($t = 0.58$, $n = 14$, P between .5 and .6). In all cases, the *aa* animals contain more tryptophane than the a^+ a^+ animals. This difference is highly significant in the samples derived from both sexes ($t = 6.07$, $n = 26$, $P < .01$) and from the females ($t = 3.59$, $n = 18$, $P < .01$), only barely significant in the males ($t = 2.58$, $n = 18$, P slightly larger than .02). The results with p-dimethylaminobenzaldehyde are less reliable than those obtained with glyoxylic acid, since the visual color determination was interfered with by the appearance of a yellow color in the a^+ a^+ material, which might perhaps be due to kynurenin.[9] It agrees,

[1] This work was aided by a grant-in-aid of the American Association for the Advancement of Science. The author wishes to acknowledge valuable advice given by Dr. J. H. Wilson and Dr. F. O. Zillesen of Easton.

[2] E. Caspari, *Arch. Entw. mech.*, 130: 253, 1933.

[3] G. W. Beadle and B. Ephrussi, *Genetics*, 21: 225, 1936.

[4] Rev. by B. Ephrussi, *Quart. Rev. Biol.*, 17: 327, 1942.

[5] A. Butenandt, W. Weidel and E. Becker, *Die Naturw.* 28: 447, 1941.

[6] R. J. Block and D. Bolling, "The Determination of Amino Acids." Burgess Publishing Company, Minneapolis, Minn.

[7] C. E. May and E. R. Rose, *Jour. Biol. Chem.*, 54: 213, 1922.

[8] S. Ya. Demyanovskii, Uchenye Zapiski Fakulteta Estestvoznaniya Moscov. Gosudarst. Pedagogicheskii Inst., Lab. Org. i Biol. Khim. 1938, No. 3, 89.

[9] H. Kikkawa, *Genetics*, 26, 587, 1941.

TABLE I

Genetic constitution	Sex	Per cent. tryptophane	Number of determinations	Method
a^+a^+	♂ and ♀	.233 ± .0138	15	glyoxylic acid
a^+a^+	♂	.297 ± .0074	10	glyoxylic acid
a^+a^+	♀	.206 ± .0192	12	glyoxylic acid
a^+a^+	♂ and ♀	.27	2	p-dimethylaminobenzaldehyde
aa	♂ and ♀	.409 ± .0253	13	glyoxylic acid
aa	♂	.360 ± .0240	8	glyoxylic acid
aa	♀	.335 ± .0326	8	glyoxylic acid
aa	♂ and ♀	.35	2	p-dimethylaminobenzaldehyde

however, with the determinations with glyoxylic acid in so far as in both parallel determinations more blue color was formed in the *aa* than in the a^+ a^+ samples.

It can be concluded from these determinations, that *aa* Ephestia contain more of a substance which gives the reactions characteristic of tryptophane with both glyoxylic acid and p-dimethylaminobenzaldehyde, than a^+ a^+ Ephestia. Since both reactions are supposed to be characteristic of the indole group, the results tend to support the assumption that in *aa* Ephestia the oxidation of the indole ring is inhibited.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE ANALYTICAL METHOD FOR THE DETERMINATION OF PROPYLENE AND TRIETHYLENE GLYCOL[1]

IN the course of an investigation of the bactericidal effects of propylene and triethylene glycol it became necessary to devise a rapid and accurate method for the analysis of aqueous solutions containing 50 to 100 per cent. of these substances. Since these solutions were frequently contaminated with small amounts of discoloring impurities or other organic substances, analytical methods such as the determination of the refractive index were of no value. Chemical procedures[2] adapted to the determination of small quantities (0–5 mgm) are too cumbersome and involve tedious and inaccurate dilution methods in addition to the possibility of not obtaining a representative sample.

We found that the viscosity of an aqueous solution bears a very regular and definite relationship to the quantity of glycol present in the solution. From this observation the apparatus shown in Fig. 1 was constructed. It consists of a 12-inch length of 7 mm glass tubing, the end of which had been held in a flame until the opening was closed to about 0.2 mm. Interval marks were placed 6 inches apart and 3 inches from both ends. The tube, including the marked-off interval, was surrounded by a water jacket consisting of an 8-inch length of 20 mm tubing; this was fixed by means of a cork.

To make a determination the water jacket is filled with water at 25° C. and the unknown solution, the temperature of which has previously been adjusted to 25° C., is drawn into the inner tube by means of suction on a small length of rubber tubing attached to the top. The rubber tube is then constricted, holding the column of liquid in place. When the constriction is released the meniscus of the liquid slowly falls. The time required for the meniscus to pass the interval marks is determined by a stop-watch.

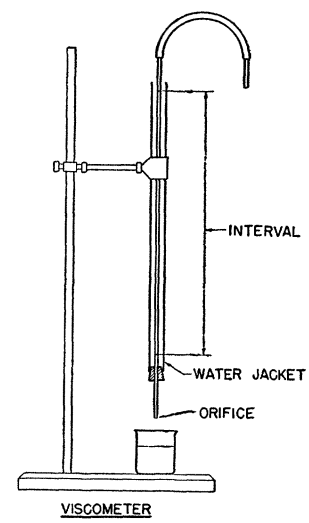

FIG. 1

Known solutions were carefully prepared, using volumetric methods. The concentrations of these solutions ranged from 50 to 100 per cent. glycol in water. The time required for each solution to pass through

[1] From the Northwestern Technological Institute and the Department of Medicine, Northwestern University Medical School. The work described in this paper was done under contract, recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Northwestern University.

[2] T. T. Puck, SCIENCE, 95: 178, 1942.