

Remarkable Seasonal Variations of Urinary Gonadotrophin Excretion in Young Girls

Pursuing our studies on gonadotrophin excretion during infancy and puberty¹, we have collected a large quantity of urine from young girls (11 to 14 years of age) in order to measure once again the gonadotrophin content.

We observed that the urinary extracts (prepared according to ALBERT²) had remarkable differences in their gonadotrophin activity depending upon the season at which they were obtained, spring or autumn.

We repeated the collection of urine twice in the spring and twice in autumn, between the 29th and 30th of April and between the 29th and 30th of October, both in 1961 and 1962.

The gonadotrophic activity of the extracts was assayed according to KLINEFELTER³, the potency thus being determined in mouse units. The procedure of ALBERT⁴ was also employed. Several doses of the extracts were injected into normal intact weanling rats to obtain the characteristic dose response curve for ovaries and uterus growth.

It was demonstrated that the gonadotrophic activity of the extracts of urine collected in spring was about 10 times higher than that of similar extracts collected in autumn.

Similar results were obtained by the determination of LH content in the same urinary extracts, using the method of PARLOW⁵, as modified by SCHMIDT-ELMENDORFF and LORAIN⁶. The ovarian ascorbic acid depletion was measured according to ROE and KUETHER⁷. Statistical analysis of our results was done by the method of BLISS⁸.

The results of both determinations are presented in the Table, in which the official meteorological data for the days selected are also reported. Our results indicate that there is a marked seasonal variation of urinary excretion

of gonadotrophins, which are approximately 9-10 times higher in the spring than in the autumn. The values for the LH content of the samples examined are in good agreement with those of the total gonadotrophic activity of the same extract.

Riassunto. Si è dosato il contenuto gonadotropinico di urine di soggetti di sesso femminile, tra gli 11 ed i 14 anni di età raccolte in due anni successivi (1961-1962) a mezza primavera ed a mezzo autunno.

Si è osservato che il contenuto gonadotropinico era sia nell'una sia nell'altra serie di determinazioni molte volte maggiore (circa dieci volte) nel periodo primaverile in confronto che nel periodo autunnale.

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¹ B. CARLETTI and E. KEHYAYAN, *Folia endocrinol.*, in press.

² A. ALBERT, *Rec. Proc. Horm. Res.* **12**, 227 (1956).

³ K. S. KLINEFELTER, S. ALBRIGHT, and G. C. GRINSWOLD, *J. clin. Endocrinol.* **3**, 530 (1943).

⁴ A. ALBERT, S. KELLY, and J. KOB, *J. clin. Endocrinol.* **18**, 843 (1958).

⁵ A. P. PARLOW, in *Human Pituitary Gonadotrophins* (Ed. A. Albert, C. C. Thomas, Springfield, Ill. 1961), p. 300.

⁶ H. SCHMIDT-ELMENDORFF and J. A. LORAIN, *J. Endocrinol.* **11**, 233 (1957).

⁷ J. H. ROE and C. A. KUETHER, *J. biol. Chem.* **147**, 399 (1943).

⁸ C. I. BLISS, *Vitamin Methods* (Academic Press, New York 1951), vol. 2, p. 445.

Days of urine collection	Hours of sunshine ^a	Mean temperature °C ^a	Atmospheric pressure ^a mm Hg	Total quantity of extracted urine (l)	Total gonadotrophic activity mU/l	LH activity µg/l
29-30 April 1961	5.30	16.6	74.1	97	48.0	339.8
29-30 October 1961	1.35	13.3	74.8	85	5.5	38.2
29-30 April 1962	7.35	14.3	74.3	125	44.0	359.0
29-30 October 1962	3.35	10.2	74.3	75	4.8	42.2

^a Official records of the Milan University Observatory.

Keto Acids in the Haemolymph of *Dysdercus koenigii* (Fabr.)

The composition of haemolymph or blood of insects differs a great deal from that of other animal groups¹. Insects in general are characterized by high concentrations of free amino acids and organic acids in the haemolymph. The concentrations of various components of haemolymph, however, show a great variation and differ in detail from one insect species to another. The present work was, therefore, undertaken to determine the various keto acids in the haemolymph of *Dysdercus koenigii* (Fabr.).

The adults of *Dysdercus* were collected from the Government Agricultural Gardens, Kanpur. The haemolymph was collected by cutting the antennae of insects and allowing the haemolymph to drain into small tubes kept in freezing mixture. The keto acids in the haemolymph were estimated as dinitrophenylhydrazones derivatives by the method of FRIEDEMANN and HUGEN². For the identification of various keto acids present in the

¹ G. R. WYATT, *Ann. Rev. Entomol.* **6**, 75 (1961).

² T. E. FRIEDEMANN and G. HUGEN, *J. biol. Chem.* **147**, 415 (1943).