ABSTRACTS OF THE 8th CONGRESS OF THE INTERNATIONAL STUDY GROUP FOR STEROID HORMONES

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SPEAKERS

EARLY STAGES OF GESTATION

Blastocyst steroids; their synthesis and action, R. B. HEAP, J. E. GADSBY, CATHERINE WYATT and A. P. FLINT, A.R.C. Institute of Animal Physiology, Babraham, Cambridge CB2 4AT, England

Steroidogenic activity in blastocyst tissue was first demonstrated in the rabbit [1]. Subsequent studies revealed the presence of progesterone in the blastocoel fluid at a concentration higher than that in maternal plasma implying that the steroid was either synthesized or concentrated by blastocyst tissue [2,3]. These investigations provided no evidence for the synthesis of oestrogens.

The concept of the maternal recognition of pregnancy involving a luteotrophic or anti-luteolytic influence on the corpus luteum and consequent extension of luteal progesterone secretion will be discussed. In 1973 it was reported that the pig blastocyst has the capacity to synthesize oestrogens from neutral steroid precursors *in vitro* [4] and subsequent work has shown that this tissue possesses a range of enzymes concerned in the synthesis and metabolism of steroids [5]. The time of onset of blastocyst steroid synthesis will be described and data presented to suggest that maternal precursors reach blastocyst tissue which converts them to oestrone and oestradiol-17β. The synthesis and metabolism of steroids in blastocyst and endometrial tissue before the time of definitive attachment probably results in oestrogens from the trophoblast being conjugated in the maternal endometrium and released into maternal circulation. This activity coincides with the occurrence of oestrone sulphate in peripheral plasma uterine venous blood and urine. Tissues in which sulphatase activity is found in early pregnancy in the pig include the corpus luteum, the hypothalamus and the pituitary. The implication of these findings will be discussed in terms of the action of oestrogens from embryonic tissue in the regulation of the life span of the corpus luteum in early pregnancy [6]. Comparative studies indicate that enzymes involved in steroid metabolism are present in blastocyst tissue of several species [7].

References

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UTERINE SPECIFIC PROTEINS

Progesterone induction of uteroglobin synthesis in the rabbit, M. BEATO, Institut für Physiologische Chemie der Philipps-Universität, 3550 Marburg, G.F.R.

Among the multiplicity of effects of progesterone on the structure and function of rabbit uterus the induction of uteroglobin is chosen as an example of specific regulation of uterine protein synthesis. Uteroglobin is a small globular protein composed of two similar polypeptide chains covalently bound by disulphide bridges. In the reduced form uteroglobin binds progesterone with relatively high affinity and specificity, but its physiological function is otherwise unknown. Progesterone administration enhances the rate of synthesis of uteroglobin in isolated uteri and leads to the accumulation of the mRNA for pre-uteroglobin, a precursor of the uteroglobin monomer containing some 15 additional aminoacids. This mRNA has been purified to homogeneity and transcribed *in vitro* into a complementary DNA, which can now be used for the titration of specific sequences during induction. The progesterone receptor, which is presumably involved in the induction mechanism, has been characterized and partially purified by means of synthetic gestagens. The availability of the hormone receptor and the gene product will permit investigation of the molecular mechanism underlying uteroglobin induction.

Methods of allocating functions to steroid-hormone induced proteins of unknown activity, R. J. B. KING, Hormone Biochemistry Department, Imperial Cancer Research Fund, P.O. Box 123, Lincoln's Inn Fields, London WC2A 3PX, England

Steroid hormones change the rate of synthesis of many proteins. In cases like chick oviduct the function of the proteins so made is easily determined but in the uterus where sex steroids promote proliferation, the functions of the induced proteins are less easily resolved. This is exemplified by oestrogen-induced protein (IP), discovered seven years ago but whose function is still unknown. The talk will describe ways in which the biological functions of unknown proteins might be investigated with particular emphasis on the use of cell culture methods used to study IP function. IP has been extensively purified and, at each stage of purification, is able to stimulate the incorporation of [^{3}H]-thymidine into cultured fibroblasts.

HUMAN UTERINE RECEPTORS

Estradiol and progesterone receptors in normal and abnormal human endometrium, P. ROBEL, F. BAYARD, C. LEVY, S. DAMILANO, J. P. GAUTRAY, J. DE BRUX, J. P. WOLF and E. E. BAULIEU, Lab. Hormones, 94270 Bicêtre, France

Estradiol and progesterone receptors have been character-