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ADVANCE ABSTRACTS OF PAPERS

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ABSTRACTS OF SHORT PAPERS

Growth Hormone and Pituitary Tumors

LH — RH

15. *W. Voelter, K. Zech* and *D. Gupta:* Synthesis of a peptide sequence Pyr-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2 with biological activity of LH/FSH-RH.
16. *H. Kuhl, C. Rosniatowski* and *H.-D. Taubert:* The role of hypothalamic L-cystine arylamidase activity in the feed-back mechanisms of gonadotrophin release.
17. *H.-D. Taubert, J. S. E. Dericks-Tan* and *H. Kuhl:* Stimulation of hypothalamic L-cystine arylamidase activity by prostaglandins E_2 and $F_{2\alpha}$ in the rat.
18. *G. Leyendecker, L. Wildt* and *W. Nocke:* Radioimmunoassay of LH-releasing hormone.
19. *E. Keller, H. G. Dahlen, G. Schubring, W. Klemt, R. Richter, E. Friedrich, E. W. Joel, H. I. Wyss, A. E. Schindler, H. J. Staemmler* and *H. P. G. Schneider:* Human pituitary gonadotropin index (HPGI): statistical analysis of 413 LRH tests.
20. *J. Happ, J. Beyer, F. Szamak, M. Neubauer, K. Demisch* and *K. Schöffling:* LH, FSH, testosterone and estrogens in serum of healthy men after prolonged infusion of synthetic LH-RH.
21. *A. Römmler* and *J. Hammerstein:* Time-dependent alterations in pituitary responsiveness caused by LH-RH stimulations in man.
22. *J. Girard, J. J. Staub, J. B. Baumann, M. Stahl* and *P. W. Nars:* Assessment of hypothalamo-anterior pituitary secreting capacity with one single test.
23. *D. Lüdecke, P.-C. Czygan, R. Hehrmann* and *D. Schrader:* Combined function tests with LRF and TRF in correlation to pituitary processes confirmed by operation findings.
24. *H. K. Kley, W. Wiegelmann, H. G. Solbach* and *H. L. Krüskemper:* A combined test for evaluating the somatotrophic, gonadotrophic and adrenocorticotrophic function of the anterior pituitary gland.
25. *D. Schönberg, E. W. Joel, E. Jetter* and *J. Bierich:* Graded dose response of plasma HLH and HFSH to synthetic gonadotrophin releasing factor in boys and girls before and after puberty onset.
26. *R. Illig, M. Tolksdorf, G. Mürset* and *A. Prader:* Evaluation of the hypothalamic-pituitary-gonadal axis by LH-RH in children and adolescents with Klinefelter's and Turner's syndrome.
27. *S. Heller* and *H. Weber:* Influence on LH release by prostaglandin $F_{2\alpha}$ in the rat.
28. *J. Sandow* and *W. Heptner:* Positive feedback effect of small doses of LH-RH after chronic treatment.
29. *F. Elsaesser, F. Ellendorff, N. Parvizi* and *A. König:* Response of the pituitary and testes to LH-RH in the neonatal miniature pig.

Steroid Metabolism (Part I)

30. *D. Beckmann* and *H. Breuer:* Metabolism of estrogens in liver and kidney of minipigs of different age and sex.
31. *J. H. H. Thijssen, J. Lourens* and *G. H. Donker:* Biogenesis of production of oestrogens in males with cirrhosis of the liver.
32. *P. Ball* and *E. Knuppen:* Metabolism of ethynyloestradiol and mestranol in man and interaction between 2-hydroxy-ethynyloestradiol and epinephrine.

33. *H. M. Bolt:* Kinetics of mestranol in humans in relation to its estrogenic activity.
34. *W. Wortmann, J. Schenker* and *J. C. Touchstone:* Aromatization of ^{3}H-androstenedione in the rhesus monkey liver in vivo.
35. *P. Barlas, K. Adelung, R. Röhner, A. Weimer, E. Keller* and *A. E. Schindler:* The effect of drugs on the steroid metabolism of the normal placenta.
36. *W. D. Lehmann:* The influence of prostaglandins and beta-mimetic substances on the aromatization rate in human placentas.
37. *L. Raith, A. Wirtz* and *H. J. Karl:* 5α-reduction of testosterone in mammary tumors.
38. *E. R. Lax* and *H. Schriefers:* Δ^{4}-3β-hydroxysteroid dehydrogenase activity in rat liver: intracellular distribution and sex dependency.
39. *H.-G. Hoff, R. Ghraf, E. R. Lax* and *H. Schriefers:* Regulation of the activities of the enzymes involved in the metabolism of steroid hormones in rat liver: the effect of 19-nortestosterone and the influence of cyproterone acetate on the action of testosterone and 5α-dihydrotestosterone.
40. *R. Ghraf, U. Vetter* and *H. Schriefers:* Organ specific sex differences in 17β-hydroxysteroid dehydrogenase activities in the rat.
41. *M. Krieg, R. Szalay* and *K. D. Voigt:* Binding and metabolism of testosterone and 5α-dihydrotestosterone in bulbocavernosus/levator ani muscle of male rats: in vivo and in vitro studies.
42. *H.-J. Horst, M. Dennis, J. Kaufmann* and *K. D. Voigt:* In vivo uptake and metabolism of ^{3}H-5α-androstane-3α, 17β-diol (3α-diol) and of ^{3}H-5α-androstane-3β, 17β-diol (3β-diol) by human benign prostatic hypertrophy.

Intersexuality, Cryptorchidism

43. *K. Rager, D. Schönberg* and *D. Gupta:* Hormonal biotransformation in the testicular feminization syndrome.
44. *A. E. Schindler, A. Horvath* and *I. Sellin:* Steroid metabolism in the testes of a patient with testicular feminization.
45. *A. E. Schindler, E. Keller, E. Friedrich, E. R. Jaeger-Whitegiver, E. W. Joel, H. Pösl* and *E. Stolz:* Endocrine studies in patients with testicular feminization.
46. *H. Stolecke, R. A. Pfeiffer, H. A. Hienz* and *P. Strohmenger:* "Sex reversal" in a case of mixed gonadal dysgenesis with dicentric Y-chromosome (45, X/46, X, dic (Yq).
47. *H. Cramer, R. Buchholz, E. Daume, H. Kalbfleisch* and *G. Sturm:* Mixed gonadal dysgenesis: male hermaphroditism with 46, XY/45, XO/46, X dic Y mosaicism.
48. *F. Majewski, J. R. Bierich, M. Barz, W. F. Haberlandt* and *M. Stoeckenius:* On the frequency of malformations in the different forms of Turner's syndrome.
49. *G. Mürset, A. Prader* and *W. Schmid:* Correlation between phenotype and karyotype in Turner's syndrome.
50. *U. Hirche:* Genitography: diagnostic procedure in intersex problems.
51. *A. Attanasio, K. Jendricke, J. R. Bierich, D. Gupta, G. Bulle, A. Flach, I. Reisert* and *E. Tonutti:* Cryptorchidism: clinical, hormonal and histological studies.

Renin-Angiotensin-Aldosterone System, Adiuretic Hormone, Catecholamines

52. *E. Uhlich, P. Weber* and *U. Gröschel-Stewart:* Angiotensin-stimulated vasopressin release in man; radioimmunologically determined plasma levels of vasopressin.
53. *G. Benker, H. Kaulhausen, W. Oehm* and *H. Breuer:* Renin activity and concentration of aldosterone in plasma during the menstrual cycle.
54. *H. Kaulhausen, W. Mühlbauer, K. J. Beck* and *H. Breuer:* The effect of 17α-ethynyloestradiol-17β on plasma renin activity in ovariectomized women.
55. *W. Oelkers, M. Schöneshöfer, A. Blümel, H. Kutschke, H. Kreiser* and *R. Sterzel:* Effects of progesterone and of four synthetic gestagens on the renin-angiotensin-aldosterone system in man.
56. *H. J. Kramer* and *F. Krück:* Natriuretic activity in plasma following extracellular volume expansion.
57. *H. Thomas, D. Müller-Enoch* and *E. R. Lax:* 3-hydroxy-4-methoxymandelic acid, a new metabolite of adrenaline and noradrenaline.

Adrenal Cortex

58. *G. Müller, W. Adelsen, K. Leybold, W. Müller-Ruchholtz, K. Schemmel* and *L. S. Tschirch:* Adrenal function in experimentally induced adrenalitis.
59. *U. Schwedes, H. Wehner, U. Leuschner, K. Schöffling* and *K. H. Usadel:* Development and function of isologous transplants of cell suspensions of fetal adrenal glands in the rat.
60. *E. Mäusle, H. Scherrer* and *B. Kubatsch:* Ultramorphometric studies regarding the effect of sex hormones on the adrenal cortex of the rat.
61. *R. Mies, D. Heesen* and *W. Winkelmann:* Disorders of Leydig cell function in primary adrenal insufficiency.
62. *E. Nieschlag* and *H. K. Kley:* Androgens in response to HCG in men with normal, suppressed and impaired adrenal function.
63. *W. v. Petrykowski* and *P. Burmeister:* Familial glucocorticoid insufficiency.
64. *J. Braun, O. A. Müller* and *P. C. Scriba:* Automated competitive protein binding analysis and radioimmunoassay of serum cortisol without prior organic solvent extraction.
65. *W. Vielhauer, K.-H. Gless* and *P. Vecsei:* Radioimmunoassay of 11-deoxycortisol in human plasma.
66. *A. T. A. Fazekas, J. Homoki* and *W. M. Teller:* Studies of the effect of ACTH on the cortisol content of different peripheral tissues and the adrenals in guinea pigs.
67. *B. P. Lisboa, M. Strassner, L. Nocke-Finck, H. Breuer* and *J. M. Bayer:* Studies on the metabolism of steroid hormones in a virilising tumour of the adrenal cortex.
68. *D. Engelhardt, L. Raith* and *H. J. Karl:* Female pseudohermaphroditism and hypertension due to 11β-hydroxylase deficiency in two siblings.
69. *F. Elsaesser, P. Stubbe* and *A. König:* Plasma testosterone, androstenedione and progesterone levels in newborn infants, in children and as an index of congenital adrenal hyperplasia.
70. *K. Holzmann, G. Wittenbecher* and *H. Mickan:* Prenatal diagnosis of adrenogenital syndrome.
71. *P. Edelmann* and *D. Gupta:* Hormonal investigations in adolescent idiopathic scoliosis.

Thyroid Gland

72. *J. Herrmann, H. J. Rusche* and *H. L. Krüskemper:* Triiodothyronine and thyroxine kinetics in rabbits immunized with thyroid hormones.
73. *K. Horn, K. R. Blümel, D. Koeppen* and *P. C. Scriba:* Radioimmunoassay for T_3 in serum: necessity of prior extraction.
74. *R. D. Hesch, A. v. z. Mühlen* and *J. Köbberling:* T_3 levels and the TRH test in the early phase of treatment of thyrotoxicosis with antithyroid drugs.
75. *M. Hüfner* and *H. Munzinger:* Functional parameters of the pituitary-thyroid system in thyroidectomized patients under different conditions of substitution.
76. *R. Hehrmann, C. Schneider* and *I. H. Tewfik:* The efficiency of triiodothyronine therapy in athyroid patients.
77. *J. Herrmann, H. J. Rusche, W. Wildmeister, H. A. Horster* and *H. L. Krüskemper:* Triiodotyronine and thyroxine serum levels after administration of T_3/T_4 mixtures.
78. *K. W. Wenzel* and *H. Meinhold:* Serum T_4 levels measured by radioimmunoassay in a single 3 mg L-thyroxine test in comparison to the classical L-triiodothyronine test for thyroid suppressibility: evidence of lower toxicity during thyroxine suppression.
79. *A. Ishihara, U. Loos, G. Rothenbuchner* and *E. F. Pfeiffer:* Thyroxine assay in urine as an index for the diagnosis of thyroid function.
80. *K. Joseph, J. Mahlstedt* and *Th. Kranz:* Correlation of serum TBG concentrations with the results of conventional in-vitro tests.
81. *P. G. Livesey, F. Erhardt, K. Horn* and *P. C. Scriba:* Isolation and radioimmunoassay of thyroxine binding globulin.
82. *G. Rabenhorst, K. Lennert, W. Bindeballe, Hg. Lahrtz, K. Schemmel* and *G. Waschulzik:* Cytology, cytophotometrical measurement of Feulgen DNA and cytochemistry of cold nodules.
83. *J. Bommer, E. Ritz, B. Krempien, O. Mehls* and *B. Schulze:* Synthesis of chondroitin sulfate in experimental hypothyroidism.

Steroids: Transport Proteins and Determinations

84. *R. K. Wagner* and *W. Rüffert:* Assay of CBG and SHBG by agar gel electrophoresis.
85. *H. Kappus* and *H. M. Bolt:* Irreversible binding of ethynyloestradiol metabolites to proteins and nucleic acids.
86. *D. Egert, W. Jonat* and *H. Maass:* Dependence of in-vitro progesterone metabolism on protein binding in the rat uterus.
87. *W. Geisthövel* and *K. D. Morgner:* Comparison of the binding capacity of the sexual hormone-binding globulin, free testosterone and stimulation of Leydig cells in patients with hypergonadotrophic and hypogonadotrophic hypogonadism.
88. *E. Nieschlag, H. K. Kley* and *K. H. Usadel:* Biological activity and metabolism of testosterone bound to circulating antibodies.
89. *E. Friedrich, E. R. Jaeger-Whitegiver, M. Bieder, H. Halverscheidt, B. Penke, P. Pallai, E. Keller* and *A. E. Schindler:* Standardization of specific radioimmunoassays for plasma progesterone, estradiol, estrone and androstenedione.

90. *B. Hoffmann* and *R. Hamburger:* Determination of progesterone in milk by radioimmunoassay and its application for the diagnosis of bovine fertility.
91. *P. Kemeter, H. Salzer, G. Breitenecker* and *F. Friedrich:* Progesterone, oestradiol-17β and testosterone levels in the follicular fluid of tertiary follicles and Graafian follicles of human ovaries.
92. *E. R. Jaeger-Whitegiver, M. Bieder, U. Nickel, E. W. Joel, E. Keller, E. Friedrich* and *A. E. Schindler:* Plasma estrogens, progesterone and FSH/LH ratio in normal and abnormal cycles and in cycles under oral contraceptive treatment.

Carbohydrate and Lipid Metabolism

93. *G. Klöppel* and *H.-J. Schäfer:* Localization and identification of calcium in B-cells of mice. Morphologic-functional studies on insulin secretion.
94. *R. Landgraf, M. Klingenburg, M. Landgraf-Leurs, R. Hörl* and *I. Marschner:* Kinetics of insulin and glucagon release from the isolated pancreas under extreme nutritional conditions.
95. *V. Maier, M. Lambach, H. Laube* and *E. F. Pfeiffer:* On the mechanism of insulin secretion: in-vitro stimulation by butandioles.
96. *U. Krause, J. Beyer, K. H. Usadel* and *F. Stelzner:* Different insulin-producing tumors in a patient with polyadenomatosis of the islet cells.
97. *K. H. Usadel, U. Schwedes, U. Leuschner* and *K. Schöffling:* Development of isologous transplants of cell suspensions of the fetal pancreas in the rat.
98. *H. Bojar, K. Balzer, M. Stannek, W. Reipen* and *W. Staib:* Hormone sensitivity of isolated liver parenchymal cells.
99. *K.-G. Petersen, W. Doll, S. Steinhilber* and *L. Kerp:* Specific binding of insulin in the liver of steroid-diabetic mice.
100. *H. U. Tietze* and *R. D. Schmid:* Impaired regulation of cortisol and of epinephrine relase in children with ketotic hypoglycemia.
101. *L. Tharandt, R. I. Diekers, N. Breuer* and *W. Staib:* Effects of testosterone on glugacon and lactate-induced gluconeogenesis studied with the model of isolated perfused (without hemoglobin) mice livers.
102. *C.-J. Estler* and *P. Mitznegg:* Effect of clomiphene on lipolysis.
103. *G. G. Hofmann, G. Schneider* and *L. Krick:* Lipolytic effect of L-triiodothyronine and L-thyroxine on insulin-stimulated fat cells of obese and normal-weight subjects.
104. *D. Heinz, G. J. Kremer, G. Hoffmann, M. Schirazi* and *G. W. Oertel:* metabolism of sulfoconjugated 7α-^{3}H-DHEA in hyperlipoproteinemia.

Prolactin, HCS

105. *M. Schmidt-Gollwitzer* and *B. B. Saxena:* A homologous radioimmunoassay of human prolactin.
106. *W. Wuttke* and *M. Fenske:* Effects of hypothalamic noradrenaline depletion on serum prolactin and LH in male rats.
107. *A. v. z. Mühlen, G. Schwinn, J. Köbberling. R. D. Hesch, F. Adlkofer* and H. *Schleusener:* Prolactin response to TRH and chlorpromazine in normal subjects and in patients with pituitary diseases.
108. *K. v. Werder, C. R. Pickardt, B. Glöckner, M. Gottsmann, H. K. Rjosk* and *P. C. Scriba:* Prolactin secretion in patients with pituitary tumors.

TTRH — TSH

Gonadotropins

129. *K. Schmidt-Gollwitzer, B. B. Saxena, M. Schmidt-Gollwitzer* and *J. Nevinny-Stickel:* Radioimmunological determination of FSH, LH and HCG with antibodies specific for β-subunits.
130. *D. Graesslin, Chr. Weise, W. Braendle* and *F. Leidenberger:* The different molecular forms of human gonadotropins.
131. *N. Parvizi, F. Ellendorff* and *D. Smidt:* LH secretion during the estrous cycle and the effects of pentobarbital in the miniature pig.
132. *F. Ellendorff, F. Elsaesser, A. Hartjen, N. Parvizi* and *D. Smidt:* Plasma LH and testosterone levels in response to copulation in the male miniature pig.
133. *K.-D. Döhler* and *W. Wuttke:* Gonadotropins, prolactin and progesterone in immature rats.
134. *O. Jürgensen, R. Karschnia, A. Baloussa, I. Fritz, E. May, C. Robyn* and *H.-D. Taubert:* Testing the reactivity of the hypothalamic-pituitary axis with the clomiphene stimulation test in women with secondary amenorrhea.
135. *P. Doerr* and *K. M. Pirke:* Response of plasma oestradiol, oestrone and testosterone to the administration of HCG, fluoxymesterone and dexamethasone in normal adult males.
136. *M. Neubauer, K. Demisch, F. Bidlingmaier* and *K. Schöffling:* Effect of HCG on plasma concentrations of estrone, estradiol and testosterone in male hypogonadism.
137. *F. Friedrich, P. Kemeter* and *H. Salzer:* Ovulation inhibition with human chorionic gonadotrophin.
138. *V. Pahnke, F. Leidenberger* and *J. Künzig:* Correlation between rat testicular HCG (LH)-binding capacity, Leydig cell number and testicular secretory function throughout pubescence.
139. *W. Braendle, P. Brucks, D. Graesslin* and *G. Bettendorf:* Receptor analysis of gonadotrophin-treated ovaries.
140. *F. Leidenberger, V. Pahnke, W. Braendle* and *D. Graesslin:* Attempts on the solubilization of LH-receptors from Leydig cell membranes.
141. *L. Wildt, G. Leyendecker* and *W. Nocke:* Binding of FSH-J^{125} to rat ovarian homogenates.

Steroid Receptors and Effects

142. *K. Klinga* and *B. Runnebaum:* Determination of estradiol-17β binding proteins in human myometrium at term of pregnancy.
143. *K. Klinga, C. Hassenbach, J. Hohneck, H. Heep* and *B. Runnebaum:* Relationship between estradiol-17β receptor and free estradiol and between corticosteroid binding globulin and progesterone in human myometrium during the menstrual cycle.
144. *H. J. Kyrein* and *B. Hoffmann:* Effects of in-vivo pretreatment with anabolic preparations with estrogenic activity on uterine estrogen receptors of calves.
145. *J. Poortman, J. H. Prenen, J. H. H. Thijssen* and *F. Schwarz:* Interaction of Δ^6-androstene-3β, 17β-diol with oestrogen and androgen receptors in human uterine tissue and mammary tumour tissue.

1446. *A. Hughes* and *P. W. Jungblut:* The effect of estradiol and mesterolone on the concentrations of cytoplasmic estrogen and androgen receptors.
1447. *P. I. Szendro, M. Little* and *P. W. Jungblut:* The biosynthetic sequence of the various forms of cytoplasmic estradiol receptor.
1448. *P. W. Jungblut* and *G. Bayerköhler:* Extraction of "nuclear" estradiol receptors from purified nuclei.
1449. *P. Benes* and *G. W. Oertel:* Effects of DHEA and its sulfoconjugates upon c-AMP in human erythrocytes.
1550. *H.-G. Dahnke* and *K.-O. Mosebach:* Effect of testosterone on ^{3}H-labelling of the RNA and proteins in the prostate and seminal vesicles of immature rats after administration of ^{3}H-uridine.
1551. *A. Edelmann, C. Burgmann, R. v. Berswordt-Wallrabe* and *K.-O. Mosebach:* Influence of growth hormone and prolactin (bovine) on the uptake of testosterone and progesterone into the prostate and seminal vesicles of immature rats.
1552. *F. Lehmann, I. Just-Nastansky, B. Behrendt, P.-J. Czygan* and *G. Bettendorf:* Influence of exogenous steroids on corpus luteum function.

Steroid Metabolism (Part II)

1553. *J. C. Plasse* and *B. P. Lisboa:* Quantitative study of the metabolism of Δ^4-3-oxo-C_{19}-steroids in the rat prostate.
1554. *U. Hoffmann* and *B. P. Lisboa:* Metabolism of Δ^4-3-oxo-C_{19}-steroids in the rat uterus.
1555. *O. Freire, M. Breckwoldt* and *B. P. Lisboa:* In-vitro study on the metabolism of oestrone and testosterone by the rhesus monkey kidney.
1556. *B. P. Lisboa, M. Strassner, C. Wulff* and *U. Hoffmann:* 5β-reductase in the human fetal brain.
1557. *E. Bergheim* and *G. W. Oertel:* Influence of G-6-PDH on the metabolism of DHEA in the guinea pig.
1558. *G. Hoffmann, G. Hoffmann-Treffz, B. Morsches, H. Holzmann* and *G. W. Oertel:* Metabolism of DHEA in the erythrocytes of psoriatics.
1559. *J. R. Strecker* and *Ch. Lauritzen:* Load-test for feto-placental function with DHA-S and determination of plasma estrogens by radioimmunoassay.
1560. *H. J. Künzig, W. Geiger* and *P. Gwuzdz:* Effect of DHEA-S on the plasma level of estrone, estradiol-17β and estriol in the last trimenon of pregnancy.

ACTH

1611. *R. Lang, I. Hilwig, H. L. Fehm, K. H. Voigt* and *E. F. Pfeiffer:* Monolayer culture of rat anterior pituitary cells as a model for studies of ACTH.
1622. *H. L. Fehm, K. H. Voigt, R. Lang, M. Schleyer* and *E. F. Pfeiffer:* Spontaneous release of immunoreactive ACTH from isolated rat pituitary cells.
1633. *A. Espinoza, I. Andresen* and *M. Kroll:* Biological ACTH determination in human plasma in the pg-range.
1644. *O. A. Müller, X. Baur, I. Marschner, P. Schwandt, P. C. Scriba* and *P. Weisweiler:* ACTH bioassay with isolated rat adrenal cells: ACTH activity of the porcine lipotropic peptide B.
1655. *K. H. Voigt, H. L. Fehm, R. Lang* and *E. F. Pfeiffer:* Degradation of ACTH by isolated adrenal cells: influence of plasma.

166. *A. Espinoza* and *M. Neuss:* Secretion dynamics and hormone synthesis of isolated human adenohypophyseal cells and hormonally active adenohypophyseal tumour cells.
167. *K. Demisch, M. Neubauer, J. Happ, J. Beyer* and *K. Schöffling:* Influence of tetracosactrin on plasma levels of testosterone, LH and FSH.

Calcium Metabolism

168. *K. Forster, L. Gozariu, J. D. Faulhaber, H. Minne* and *R. Ziegler:* Influence of parathyroid hormone and calcitonin on the lipolysis of human adipose tissue.
169. *E. Altenähr* and *E. Kampf:* Suppression of parathyroid gland activity by growth hormone in-vivo.
170. *H. R. Henrichs, H. H. Heissmeyer, R. Karg, K.-G. Petersen, A. Petrin* and *L. Kerp:* Dose response relation between synthetic salmon calcitonin and gastric acid output with and without stimulation by pentagastrin.
171. *P. O. Schwille, N. M. Samberger* and *D. Scholz:* Pentagastrin-induced changes in plasma calcium fractions and pancreatic glucagon in humans.
172. *P. O. Schwille, U. Koch* and *N. M. Samberger:* Serum calcium fractions in subtotally thyroidectomized patients.
173. *M. A. Dambacher, Th. Lauffenburger, J. Guncaga* and *H. G. Haas:* Calcitonin in Paget's disease of bone: a study of the dose response to the human and salmon synthetic peptide.
174. *H. Schmidt-Gayk, H. Seitz, E. Ritz* and *E. Böhme:* Primary hyperparathyroidism: influence of renal function on urinary cyclic AMP.
175. *A. Schulz* and *G. Delling:* Long-term effect of calcitonin on delayed bone mineralization and bone remodelling in experimental hypoparathyroidism.

ABSTRACTS OF MAIN PAPERS

Acta endocr. (Kbh.)
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II. Medizinische Klinik der Universität München

AUTOMATED COMPETITIVE PROTEIN BINDING ANALYSIS AND RADIOIMMUNOASSAY OF SERUM CORTISOL WITHOUT PRIOR ORGANIC SOLVENT EXTRACTION*

J. Braun, O. A. Müller and *P. C. Scriba*

Problem: So far competitive protein bindung analysis (CPBA) and radioimmunoassay (RIA) of cortisol (F) necessitated extraction with organic solvents. The extraction procedure represents an obstacle for automatization. We have devised a new method, by which the three main steps of a CPBA or RNA for F–displacement from its serum protein bindings, the reaction with a binding reagent (CBG or antibody) and the bound/free separation — take place consecutively on the same dextran gel column. This principle favours automatization by simultaneous column-chromatography.

Method: A mixture of 100 μl standard, respectively unknown, 100 μl ^{3}H-F and 100 μl 0.1 N HCl are transfered by a micropump to an acidified (0.1 N HCl, pH = 1.0) dextran gel column (2 g Sephadex G-10). While F remains quantitatively bound to the gel, the proteins are eluted with 0.2 M Tris-HCl-buffer pH = 8.0. The steroid containing columns are subsequently equilibrated with CBG-serum or antibody, respectively, followed by the elution of the bound hormone with buffer. The free F ist eluted with excess serum, followed by 0.1 N HCl. The column is now ready for the next assay. The time for the whole chromatography is 52 minutes. An automatization was derived from the automatization of the T_3-uptake-test and T_4-assay (1), allowing the measurement of 25 samples at a time. A sensitivity (CPBA) was chosen which permitted to read concentrations ranging from less than 1 to 20 $\mu g\%$ from the same standard curve.

Results (CPBA): The within assay precision (serum) was 7.5 $\pm$ 0.68 $\mu g\%$ (SD, N = 21). The between assay precision (serum) was 14.2 $\pm$ 1.7 $\mu g\%$, with a variation coefficient of 12.1% (N = 46). The recovery of standards added to serum was 96 $\pm$ 5%, all serum dilutions were parallel to the standard curve. Specificity was comparable to the F-CPBA using solvent extraction, however progesterone, 11-desoxy-cortisol, 77α-OH-progesterone and testosterone show less interference, since they are adsorbed more strongly to the gel and exhibit less binding to CBG. Normal values: The 9 a. m. levels ranged from 4.5 to 20 $\mu g\%$ (mean: 11.1 $\mu g\%$, N = 68); the mean F-level after an overnight dexamethasone suppression (2 mg p. o.) was 2.6 $\pm$ 0.8 $\mu g\%$ (SD, N = 14). After a 4-hour infusion of 25U ACTH the serum-F rose to 32.8 $\pm$ 7.1 $\mu g\%$ (N = 19). 30 minutes after a single i. v. injection of 25U ACTH the same subjects showed a similar rise up to 29.6 $\pm$ 8.2 $\mu g\%$. — The use of an antiserum instead of CBG-serum increases sensitivity and specificity depending on the quality of the antibody. The RIA-results will be compared with the results obtained by CPBA.

1. *Horn, K. et al.:* Z. anal. Chem. *259* (1972) 222.

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