

เอกสารอ้างอิง

- เพทาย พงษ์เพียจันทร์ และ ทศนีย์ อภิชาติสรางกูร. 2533. การประเมินประสิทธิภาพการสืบพันธุ์ของโคนมโดยวิธีเรดิโออิมมูโนโนแอสเซ. วารสารเกษตร. 6(1) : 21-40.
- เพทาย พงษ์เพียจันทร์ และ พันทิพา พงษ์เพียจันทร์. 2535. การผลิตแอนติบอดีต่อต้านฮอร์โมนเพื่อการวิเคราะห์เรดิโออิมมูโนโนแอสเซ. 1. การเปรียบเทียบการผลิตแอนติบอดีต่อต้านฮอร์โมนโปรเจสเตอโรนในไก่, กระต่าย และหนูตะเภา. วารสารเกษตร. 8(1):104-114.
- ศุภมิตร เมฆฉาย. 2537. การตรวจการตั้งท้องในโคนมโดยการวัดฮอร์โมนโปรเจสเตอโรนในอุจจาระ. ปัญหาพิเศษปริญญาโท ภาควิชาสัตวศาสตร์ คณะเกษตรศาสตร์ มหาวิทยาลัยเชียงใหม่. 28 หน้า.
- Abraham, G.E. and P.K. Grover. 1971. Covalent linkage of steroid hormone to protein carriers for use in radioimmunoassay, p.140-152. In W.D. Odell and W.H. Daughaday (eds.). Principles of Competitive Protein-Binding Assays. J.B. Lippincott Company, Philadelphia.
- Abraham, G.E., R. Swerdloff, D. Tulchinsk and W.D. Odell. 1971. Radioimmunoassay of plasma progesterone. J. Clin. Endocr. 32:619-624.
- Acosta, B., G.K. Tarnavsky, T.E. Platt, D.L. Hamernik, J.L. Brown, H.M. Schoenemann and J.J. Reeves. 1983. Nursing enhances the negative effect of estrogen on LH release in the cow. J. Anim. Sci. 57:1530-1536.
- Adlercreultz, H. and F. Martin. 1976. Oestrogen in human pregnancy faeces. Acta Endocr. 83:410-419.
- Adlercreultz, H. and P. Jarvenpaa. 1982. Assay of estrogens in human feces. J. Steroid. Biochem. 17:639-645.

- Alabart, J.L., J. Folch, M.J. Cocero and Y. Cognie. 1991. Effect of immunization on reproduction performance, embryo quality and progesterone in Rasa Aragonesa ewes actively immunization against androstenedione or passively immunized against testosterone. *Theriogenology*. 35(4):799-813.
- Alexander, J. and J.M. Brewer. 1995. Adjuvants and their modes of action. *Livest. Prod. Sci.* 42:153-162.
- Apichartsrungkoon, T. and P. Pongpiachan. 1990. Use of milk progesterone profile for the study of fertility in the postpartum period of dairy cows. *J. Agriculture* 6:219-225.
- Armstrong, R.W., J. Gauldie and E.V. Younglai. 1978. Effects of active immunization of female rabbits against testosterone. *J. Endocr.* 79:339-347.
- Auclair, D., S.F. Sowerbutts and B.P. Setchell. 1995. Effect of active immunization against testosterone on plasma gonadotrophin concentrations, spermatogenic function, testicular blood flow, epididymis mass and mating behaviour in adult rams. *J. Reprod. Fert.* 104(1):17-26.
- Baird, D.T., J.R. Goding, Y. Ichikawa and J.A. McCracken. 1968. The secretion of steroids from the autotransplanted ovary in the ewe spontaneously and in response to systemic gonadotrophin. *J. Endocr.* 42:283-299.
- Baird, D.T. 1977. Evidence *in vivo* for the two-cell hypothesis of oestrogen synthesis by the sheep graafian follicle. *J. Reprod. Fert.* 50:183-185.
- Besch, N.F., M.E. Buoy, W.S. Haller, H.J. Johnson and P.K. Besch. 1986. Radioimmunoassay for 4-androsten-3,17-dione, including the synthesis, production and characterization of the antiserum. *Clin. Chem.* 32(7):1357-1367.
- Boland, M.P., J.D. Murray, R.J. Scaramuzzi, R. Sutton, R.M. Hoskinson, I.G. Hazelton and C.D. Nancarrow. 1984. Reproductive wastage and chromosomal abnormalities Merino ewes, p. 137-139. In D.R. Lindsay and D.T. Pearce (eds.). *Reproduction in Sheep*. Australian Academy of Science, Canberra.

- Boland, M.P., C.D. Nancarrow, J.D. Murray, R.J. Scaramuzzi, R. Sutton, R.M. Hoskinson and I.G. Hazelton. 1986. Fertilization and early embryonic development in androstenedione-immunized Merino ewes. *J. Reprod. Fert.* 78:423-431.
- Bosch, A.M.G., F.C. den Hollander and G.F. Woods. 1974. Specificities of antisera against testosterone linked to albumin at different position (C_3, C_{11}, C_{17}). *Steroids* 23(5): 699-711.
- Bourtourault, M., V. Shacoori, J. Guerin, B. Saiag and B. Rault. 1991. Effects of simultaneous active immunization against 17β -estradiol and testosterone on pituitary and ovarian activity in the rat. *Res. Com. Chem. Path. Pharm.* 72(3):273-284.
- Budavari, S., M.J. O'Neil, A. Smith and P.E. Heckelman. 1989. *The Merck Index*. 11th ed. Merck & Co. Inc., New Jersey. 1606 p.
- Butt, W.R. 1976. *Hormone Chemistry*, Volum 2. Elits Horwood Limited, New York.
- Clarke, I.J. and R.J. Scaramuzzi. 1978. Sexual behaviour and LH secretion in spayed androgenized ewes after a single injection of testosterone or oestradiol- 17β . *J. Reprod. Fert.* 52:313-320.
- Cockrem, J.F. and J.R. Rounce. 1994. Faecal measurements of oestradiol and testosterone allow the non-invasive estimation of plasma steroid concentrations in the domestic fowl. *British Poultry Sci.* 35:433-443.
- Condom, R. and R. Emiliozzi. 1974. I. Preparation of steroid-antigens through positions of the steroids not bearing functional groups. *Steroids* 23(4):483-493.
- Cox, R.I., P.A. Wilson, R.J. Scaramuzzi, R.M. Hoskinson, J.M. George and Bindon. 1982. The active immunization of sheep against oestrone, androstenedione or testosterone to increase twinning. *Proc. Aust. Soc. Anim. Prod.* 14:511-514.
- Csapo, A., F. Dray and T. Erdos. 1975. The biological effects of injected antibodies to estradiol- 17β and to progesterone in pregnant rats. *Endocr.* 97:603-614.

- Cummins, L.T., T. O'Shea, B.M. Bindon, V.W.K. Lee and J.K. Findlay. 1983. Ovarian inhibin content and sensitivity to inhibin in Booroola and control strain Merino ewes. *J. Reprod. Fert.* 67:1-7.
- Day, M.L., K. Imakawa, M. Garcia-Winder, D.D. Zalesky, B.D. Schanbacher, R.J. Kittok and J.E. Kinder. 1984. Endocrine mechanisms of puberty in heifers: estradiol negative feedback regulation of luteinizing hormone secretion. *Biol. Reprod.* 31:332-341.
- Dean, P.D.G., D. Exley and M.W. Johnson. 1971. Preparation of 17β -oestradiol-6-(O-carboxymethyl) oxime-bovine serum albumin conjugate. *Steroids* 18(5) : 593-603.
- Dobson, H. 1983. *A Radioimmunoassay Laboratory Handbook*. Liverpool University Press, Liverpool.
- D'Occhio, M.J., D.R. Gifford, R.M. Hoskinson, T. Weatherly, P.F. Flavel, P.E. Mattner and B.P. Setchell. 1987. Reproductive hormone secretion and testicular growth in bull calves actively immunized against testosterone and oestradiol-17 beta. *J. Reprod. Fert.* 79(2):315-324
- Edwards, R.G. 1974. Follicle fluid. *J. Reprod. Fert.* 37: 189-219.
- Elsaesser, F. and N. Parvizi. 1977. Prepubertal active immunization against gonadal steroids : effects on estrus, ovulation and the oscillatory pattern of plasma LH and progesterone in the female pig. *Acta Endocrinol. Suppl.* 208:107-108.
- Erlanger, B.F., F. Borek, S.M. Beiser and S. Leiberman. 1957. Steroid-protein conjugates. I. Preparation and characterization of conjugates of bovine serum albumin with testosterone and with cortisone. *J. Biol. Chem.* 228:713-727.
- Erlanger, B.F., F. Borek, S.M. Beiser and S. Leiberman. 1959. Steroid-protein conjugates. II. Preparation and characterization of conjugates of bovine serum albumin with progesterone, deoxycorticosterone and estrone. *J. Biol. Chem.* 234:1090-1094.

- Erlanger, B.F., S.M. Beiser, F. Borek, F. Edel and S. Lieberman. 1967. The preparation of steroid-protein conjugates to elicit antihormonal antibodies, p. 144-150. In C.A. Williams and M.W. Chase (eds.). *Methods in Immunology and Immunochemistry* Volume I. Academic Press, New York.
- Folch, J., L. Alabart, M.J. Cocero and Y. Cognie. 1991. Embryo losses in Rasa Aragonesa ewes actively immunized against androstenedione or passively immunized against testosterone. *Theriogenology*. 35(4):715-724.
- Gill, J.L. and H.D. Hafs. 1971. Analysis of repeated measurements of animals. *J. Anim. Sci.* 33(2):331-336.
- Gower, D.B. and K. Fotherby, 1975. Biosynthesis of androgen and oestrogens, p. 77-104. In H.L.J. Markin (ed). *Biochemistry of Steroids Hormone*. Black-well Scientific Publications, London.
- Grieger, D.M., R. Scarborough, D.M. deAvila, H.E. Johnson and J.J. Reeves. 1990. Active immunization of beef heifers against luteinizing hormone : III. Evaluation of dose and longevity. *J. Anim. Sci.* 68 : 3755-3764.
- Hansel, W. and J.E. Fortune. 1977. The applications of ovulation control, p.237-263. In D.B. Crighton, N.B. Haynes, G.R. Foxcroft and G.E. Lamming (eds.). *Control of Ovulation*. Butterworths, London.
- Hansel, W. and H.W. Alila. 1984. Causes of postpartum anoestrus in cattle in tropics, p.21-40. In IAEA. (ed.). *Nuclear Techniques in Tropical Animal Diseases and Nutritional Disorders*. IAEA, Vienna.
- Haynes, N.B. and J.A. Southee. 1984. Effects of immunization against steroid hormones on male endocrinology, p. 427-444. In D.B. Crighton (ed.). *Immunological Aspects of Reproduction in Mammals*. Butterworths, London.
- Henderson, K.M. and P. Franchimont. 1981. Regulation of inhibin production by bovine ovarian cells *in vitro*. *J. Reprod. Fert.* 63:431-442.

- Henderson, K.M. and P. Franchimont. 1983. Inhibin production by bovine ovarian tissue *in vivo* and its regulation by androgens. *J. Repro. Fert.* 67:291-298.
- Hillier, S.G., G.V. Groom, A.R. Boyns and E.H.D. Cameron. 1974. Development of polycystic ovaries in rats actively immunised against T-3-BSA. *Nature* 250:433-434
- Houdayer, M., P. Rouze, K. Dalsgard and J.J. Metzger. 1978. Adjuvant effect of Quil-A on the porcine humoral immune response. *Ann. Immunol. (Paris)* 129(1) : 107-112. (Abstract).
- International Atomic Energy Agency (IAEA). 1984. Laboratory Training Manual on Radioimmunoassay in Animal Reproduction. Technical Reports Series No. 233. IAEA, Vienna. 269 p.
- Ireland, J.J., A.D. Curato and J. Wilson. 1983. Effect of charcoal-treated bovine follicular fluid on secretion of LH and FSH in ovariectomized heifers. *J. Anim. Sci.* 57(6) :1512-1516.
- Kamonpatana, M., V. Timsard, C. Pansin and R.I. Cox. 1985. Steroid immunization in the swamp buffalo: potential for subfertile recovery. *Buffalo J.* 1(1):53-60.
- Kellie, A.E. 1975. Methods of steroids analysis. II. Comparative binding, p. 211-226. In H.L.J. Markin. (ed.). *Biochemistry of Steroid Hormone*. Black-well Scientific Publication, London.
- Kensil, C.R., U. Patel, M. Lennick and D. Marciani. 1991. Separation and characterization of saponins with adjuvant activity from *Quillaja saponaria* molina cortex. *J. Immuno.* 142(2) : 431-437.
- King, R.H. and I.H. Williams. 1984. The influence of ovulation rate on subsequent litter size in sows. *Theriogenology*. 21(4):677-680.
- Kreider, D.L., D. Cole, R.W. Rorie, A. Dicker, S. Schiller, F. Miller and D. Gleidt. 1993. Effect of active immunization against androgenic steroid precursors on ovulation rate and litter size in gilts. *J. Anim. Sci.* 71 (Supplement 1): 125. (Abstract).

- Kutsky, R.J. 1973. Handbook of Vitamins and Hormones. Van Nostrand Reinhold Company, New York. 278 p.
- Land, R.B., B.A. Morris, G. Baxter, M. Fordyce and J. Forster. 1982. Improvement of sheep fecundity by treatment with antisera to gonadal steroids. *J. Reprod. Fert.* 66(2):625-635. (Abstract).
- Land, R.B., M. Fordyce, I.K. Gauld, B.A. Morris and R. Webb. 1983. Fertility of sheep give antisera to steroid during anoestrus. *J. Reprod. Fert.* 67(2):269-273. (Abstract).
- Larten, N.C., R. Rajamahendrane and K. Sivakumarn. 1994. Immunoreactive faecal progestins as indicators of reproductive status. *Vet. Record* 134:474-475.
- Lermite, V., T. Thimonier, R. Dufour and M. Terqui. 1991. Effect of the increase of steroid binding plasma level after passive immunization against testosterone on the control of luteinizing hormone (LH) secretion in ovariectomized underfed dairy heifers. *Reprod. Nutr. Dev.* 31:541-550.
- Lermite, V., L. Delaby, J. Thimonier, R. Dufour and M. Terqui. 1993. Effect of passive immunization against testosterone on reproductive hormone secretion and ovarian function in dairy cows and pubertal beef heifers. *Theriogenology.* 39(2):507-526.
- Leung, P.C.K. and D.T. Armstrong. 1980. Interactions of steroids and gonadotropins in the control of steroidogenesis in the ovarian follicle. *Annu. Rev. Physiol.* 42:71-82.
- Lieberman, S., B.F. Erlanger, S.M. Beiser and F.J. Agate. 1959. Steroid-protein conjugates : their chemical, immunochemical, and endocrinological properties. *Recent Prog. Horm. Res.* 15 : 165-196.
- Lindner, H.R., E. Perel, A. Friedlander and A. Zeitlin. 1972. Specificity of antibodies to ovarian hormones in relation to the site of attachment to the steroid hapten to the peptide carrier. *Steroids* 19:357-375.
- Lindsay, D.R. and T.J. Robinson. 1961. Oestrus-inducing activity of testosterone in the ewe. *Nature* 192:761-762.

- Louvet, J.P., S.M. Harman, J.R. Schreiber and G.T. Ross. 1975. Evidence for a role of androgens in follicular maturation. *Endocr.* 97:366-372.
- Lu, Z.Q., J.X. Ma, C.W. Zhou, Y.F. Wang, J. Wang, J.Y. Xiang, Y. Gao and X.L. Zeng. 1993. The production of monoclonal antibody to androstenedione and the effect of passive immunization on Xinjiang fine-wool sheep with it. *Sci. China (B)*. 36(6): 693-701.
- Martensz, N.D. and R.J. Scaramuzzi. 1979. Plasma concentrations of luteinizing hormone, follicle-stimulating hormone and progesterone during the breeding season in ewes immunized against androstenedione or testosterone. *J. Endocr.* 81:249-259.
- Martensz, N.D., R.J. Scaramuzzi and P.F.A. Van Look. 1979. Plasma concentrations of luteinizing hormone and follicle-stimulating hormone during anoestrus in ewes actively immunized against oestradiol-17 β , oestrone or testosterone. *J. Endocr.* 81:261-269.
- Martensz, N.D. 1980. The biological effects of immunization against steroids in female mammals, p. 232-262. In C.A. Finn. (ed.). *Oxford Reviews of Reproductive Biology Volume II*. Oxford University Press, New York.
- Martensz, N.D. and B.J. Everitt. 1982. Effects of passive immunization against testosterone on the sexual activity of female rhesus monkeys. *J. Endocr.* 94(2):271-82.
- McKinnie, M.R., J.H. Britt and K.L. Esbenshade. 1988. Ovarian function and hormone secretion of gilts actively immunized against androstenedione. *J. Anim. Sci.* 66:3131-3143.
- Meloen, R.H. 1995. Basic aspects of immunomodulation through active immunization. *Livest. Prod. Sci.* 42:135-145.

- Midgley, A.R. and G.D. Niswender. 1970. Radioimmunoassay of steroids, p.320-331. In E. Diczfalussy and A. Diczfalusz (eds.). *Steroids Assay by Protein Binding*. Karolinska Sjukhuset, Stockholm.
- Miller, K.F., J.K. Critser, R.F. Rowe and O.J. Ginther. 1979. Ovarian effects of bovine follicular fluid treatment in sheep and cattle. *Biol. Reprod.* 21:537-544.
- Miyake, Y., M. Shigetoshi and M. Kojima. 1990. Production of highly specific anti-testosterone antiserum by immunotolerance method. *Chem. Pharm. Bull.* 38(1):150-152.
- Mongkonpunya, K., H.D. Hafs, E.M. Convey, W.D. Oxender and T.M. Louis. 1974. Luteinizing hormone release by gonadotropin releasing hormone before and after castration in bulls. *Proc. Soc. Exp. Biol. Med.* 147: 873-877.
- Mori, T., A. Suzuki, T. Nishimura and A. Kambegawa. 1977. Evidence for androgen participation in induced ovulation in immature rats. *Endocr.* 101:623-626.
- Neri, R.O., S. Tolksdorf, S.M. Beiser, B.F. Erlanger, F.J. Agate, Jr. and S. Lieberman. 1964. Further studies on the biological effects of passive immunization with antibodies to steroid-protein conjugates. *Endocr.* 74 : 593-598.
- Newman, M.J., J.Y. Wu, B.H. Gardner, K.J. Munroe, D. Leombruno, J. Recchia, C.R. Kensil and R.T. Coughlin. 1992. Saponin adjuvant induction of ovalbumin-specific CD8+ cytotoxic T lymphocyte responses. *J. Immuno.* 148(8) : 2357-2362.
- Nieschlag, E., K.H. Usadel, U. Schwedes, H.K. Kley, K. Schoffling and H.L. Kruskemper. 1973. Alterations in testicular morphology and function in rabbits following active immunization with testosterone. *Endocr.* 92:1142-1147.
- Nieschlag, E., K.H. Usadel, H.K. Kley, U. Schwedes, K. Schoffling and H.L. Kruskemper. 1974. A new approach for investigating hypothalamo-pituitary-gonadal and adrenal feedback control mechanisms: active immunization with steroids. *Acta Endocrinol.* 76:556-569.

- Opdebeeck, J.P., J.Y.M. Wong, L.A. Jackson and C. Dobson. 1988. Vaccines to protect Hereford cattle against the cattle tick, *Boophilus microplus*. *Immunol.* 63: 363-367.
- Pathiraja, N., W.R. Carr, M. Fordyce, J. Forster, R.B. Land and B.A. Morris. 1984. Concentration of gonadotrophins in the plasma of sheep given gonadal steroids antisera to raise ovulation rate. *J. Reprod. Fert.* 72:93-100.
- Pant, H.C. 1977. Effect of androgens on concentration of LH and FSH in the peripheral plasma of anoestrous ewes. *J. Reprod. Fert.* 50:133-136.
- Payne, R.W. and R.H. Runser. 1958. The influence of estrogen and androgen on the ovarian response of hypophysectomized immature rats to gonadotropins. *Endocr.* 62:313-321.
- Pell, J.M. and R. Aston. 1995. Principles of immunomodulation. *Livest. Prod. Sci.* 42:123-133.
- Price, C.A., B.A. Morris and R. Webb. 1987. Reproductive and endocrine effects of active immunization against a testosterone conjugate in heifer. *J. Reprod. Fert.* 81:149-160.
- Radford, H.M. and A.L.C. Wallace. 1971. The effect of testosterone propionate on ovarian activity in sheep. *J. Reprod. Fert.* 53:167-171.
- Rajamahendran, R. and H. Sanders. 1991. The development of a simple fecal progesterone assay to monitor reproductive function in swine. *J. Anim. Sci.* 69:447-448. (Abstract).
- Reeve, J., C.F. Chang, D.M. deAvila, D.M. Grieger, H.E. Johnson and A.J. Roberts. 1989. Vaccines against endogenous hormones : possible future tool in animal production. *J. Dairy Sci.* 72:3363-3371.
- Rhind, S.M., R.G. Gunn, B.A. Morris, J. Clayton, I.D. Leslie and G. Gittus. 1985. Effect of passive immunization against testosterone on the reproductive performance of Scottish Blackface ewes in different levels of body condition at mating. *Anim. Prod.* 41:97-102.

- Rhind, S.M., B.A. Morris, J. Clayton, J.M. Doney, R.G. Gunn and I.D. Leslie. 1986. Effect of active or passive immunization against steroids on reproductive performance of ewes in different levels of body condition at mating. *Anim. Prod.* 43:285-292.
- Rhind, S.M., B.A. Morris, J. Clayton, R.G. Gunn, G. Gittus and I.D. Leslie. 1987. Effect of passive immunization with different doses of anti-testosterone antiserum on the reproductive performance of Scottish Blackface ewes in different levels of body condition at mating. *Anim. Prod.* 44:125-131.
- Roberts, A.J., D.M. deAvila, J.D. Gerber and J.J. Reeves. 1990. Active immunization of beef heifers against luteinizing hormone: I. evaluation of protein carries and adjuvants on antigenicity of LH. *J. Anim. Sci.* 68:3742-3746.
- SAS, 1985. SAS/STAT Guide for Personal Computers, Version 6 Edition. SAS Institute, Inc. Cary, North Carolina. 378 p.
- Scaramuzzi, R.J., D.T. Baird, N.D. Martensz, K.E. Turnbull and P.F.A. Van Look. 1981. Ovarian function in the ewe after active immunization against testosterone. *J. Reprod. Fert.* 61:1-9.
- Scaramuzzi, R.J. and R.M. Hoskinson. 1984. Active immunization against steroid hormones for increasing fecundity, p. 445-474. In D.B. Crighton. (ed.). *Immunological Aspects of Reproduction in Mammals*. Butterworths, London.
- Schanbacher, B.D. 1982. Responses of ram lambs to active immunization against testosterone and luteinizing hormone-releasing hormone. *Am. J. Physiol.* 242:E201-E205.
- Steel, R.G.D. and J.H. Torrie. 1960. *Principles and Procedures of Statistics*. McGraw-Hill Book Co., New York. 482 p.

- Stewart-Tull, D.E.S. 1989. Selection and suitability of adjuvants, p. 17-28. In A. Meheus and R.E. Spier (eds.). *Vaccines for Sexually Transmitted Diseases*. Butterworths, London.
- Terqui, M., J.H.M. Wrathall, M.D. Driancourt and P.G. Knight. 1995. Modulation of ovarian function by steroid and inhibin immunization. *Livest. Prod. Sci.* 42:181-192.
- Thompson, D.L., Jr., S.A. Voelkel, S.I. Reville, R.A. Godke and D.J. Derrick. 1984. Testosterone effects on gonadotropin response to GnRH: cows and pony mares. *J. Anim. Sci.* 58(2):409-415.
- Thompson, D.L., Jr., L.L. Southern, R.L. St. George, L.S. Jones and F. Garza, Jr. 1985. Active immunization of prepubertal boars against testosterone: testicular and endocrine responses at 14 month of age. *J. Anim. Sci.* 61(6):1498-1509.
- Thompson D.L. Jr, J.J. Wiest, W.F. Jr. Garza, K.B. Ashley and D.R. McNeill. 1987. Passive immunization of cyclic mares against androgen: gonadotropin and progesterone concentrations and estrous characteristics. *J. Anim. Sci.* 64(3):797-804.
- Thornycroft, I.H., N.K. Thornycroft, R.J. Scaramuzzi and C.A. Blake. 1975. Radioimmunoassay of serum LH and Testosterone in male rabbits actively immunized against testosterone. *Endocr.* 97: 301-306.
- Torres, A. and N.L. First. 1974. Effect of testosterone on reproductive characteristics of puberal gilts. *J. Anim. Sci.* 38(1):81-85.
- Tsang, B.K., L. Ainsworth, B.R. Downey and G.J. Marcus. 1985. Differential production of steroids by dispersed granulosa and theca interna cells from developing preovulatory follicles of pigs. *J. Reprod. Fert.* 74:459-471.
- Tyler, J.P.P., J.F. Hennem, J.R. Newton and C.W. Collins. 1973. Radioimmunoassay of plasma testosterone without chromatography : A comparison of four antisera, and the evaluation of a novel approach to liquid scintillation counting. *Steroids* 22: 871-889.

- Vaitukaitis, J., J.B. Robbins, E. nieschlag and G.T. Ross. 1971. A method for producing specific antisera with small doses of immunogen. *J. Clin. Endocr.* 33 : 988-991.
- Valentin, A., E. Precigout, M. L'Hostis, B. Carcy, A. Gorenflot and J. Schrevel. 1993. Cellular and humoral immune responses induced in cattle by vaccination with *Babesia divergens* culture-derived exoantigens correlate with protection. *Infect. Immun.* 61(2) : 734-741.
- Vermeulen, A. 1979. The androgens, p. 356-416. In C.H. Gray and V.H.T. James (eds.). *Hormones in Blood Volume 3.* Academic Press, London.
- Walker, C.S., S.J. Clark and H.H. Wotiz. 1973. Factors involved in the production of specific antibodies to estriol and estradiol. *Steroids* 21(2) : 259-283.
- Walker, M.P., D.L. Thompson, Jr., R.A. Godke and P.G. Honey. 1984. Active immunization of prepubertal bulls against testosterone : seminal and testicular characteristics after puberty. *Theriogenology* 22(3):269-278.
- Walton, J.S. 1985. Effect of active immunization against androstenedione on ovarian function in dairy cows and prepubertal gilts. *Anim. Reprod. Sci.* 8(4):349-364. (Abstract).
- Wasser, S.K., R. Thomas, P.P. Nair, C. Guidry, J. Southers, J. Lucas, D.E. Wildt and S.L. Monfort. 1993. Effects of dietary fiber on faecal steroids measurements in baboons (*Papio cynocephalus cynocephalus*). *J. Reprod. Fert.* 97 : 569-574.
- Webb, B., R.B. Land, N. Pathiraja. 1984. Passive immunization against steroid hormones in the female, p. 475-499. In D.B. Crighton. (ed.). *Immunological Aspects of Reproduction in Mammals.* Butterworths, London.
- Weinstein, A., H.R. Lindner, A. Friedlander and S. Bauminger. 1972. Antigenic complexes of steroid hormones formed by coupling to protein through position 7 : preparation from Δ^4 -3-oxosteroids and characterization of antibodies to testosterone and androstenedione. *Steroids* 20(6) : 789-812.

- Wickings, E.J., A. Becher and E. Nieschlag. 1976. Testosterone metabolism in rabbits actively immunized with testosterone. *Endocr.* 98 : 1142-1146.
- Wise, T.H. and B.D. Schanbacher. 1983. Reproductive effects of immunizing heifers against androstenedione and oestradiol-17 β . *J. Reprod. Fert.* 69:605-612.
- Wong, J.Y.M. and J.P. Opdebeeck. 1989. Protective efficacy of antigens solubilized from gut membranes of the cattle tick, *Boophilus microplus*. *Immunol.* 66(1) : 149-155.
- Younglai, E.V. and R.W. Armstrong. 1981. Peripheral concentrations of gonadotropins and progestins during pregnancy in rabbits after active immunization against testosterone. *Fertil. Steril.* 36(2):232-237.