

BIBLIOGRAPHY

- Adamski, J. and Jacob, F.J., 2001. A guide to 17β -hydroxysteroid dehydrogenases. *Mol. Cell. Endocrinol.*, 22: 171(1-2) : 1-4.
- Adkins-Regan, E., Abdelnabi, M., Mobarak, M. and Ottinger, M.A. 1990. Sex steroid levels in developing and adult male and female zebra finches (*Poephila guttata*). *Gen. Comp. Endocrinol.*, 78: (1): 93-109.
- Aire, T.A.1997. The structure of the intestinal tissue of the active and the resting avian testis.*Onderstepoort, J. Vet. Res.*,64(4):291-299
- Aire, T. A.,Olowa-okurun,M.O.& Ayeni,J.S. 1980.The seminiferous epithelium in the guinea fowl. *Numida.Meleagriscell,Tissue,Res.*, 205(2): 319-325.
- Akaishi, T., Kusuhara, S. and Ishida, K. 1974. Histochemical observations of steroid dehydrogenases and the related enzymes in livers of laying and moulting hens. *Poult. Sci.*, 53 : 1686-1689.
- Akao,T., Akao, T. and Kobashi, K. 1990. Characterization of NADP+ : 3 beta-hydroxysteroid dehydrogenase from microsomes of rat liver. *Biochim. Biophys. Acta .*, 1046(3): 271-276.
- Ali, S. 1993. The Book of Indian Birds. Bombay Natural History Society, Bombay.
- Ambadkar, P.M. and Kotak, V.C. 1976. Observations on cyclic histochemical variations of lipids and steroid dehydrogenase in testis of Feral Rock Pigeon, *Columba livia. Pavo*, 14 (1&2): 80-87.
- Ambadkar, P.M. and Kotak, V.C. 1978. Histochemical observations on 3 alpha and 17 beta-hydroxysteroid dehydrogenase in extra-gonadal tissues of Feral Blue Rock Pigeon, *Columba livia*, (Gmelin). *Ind.J.Exp.Biol.*, 16:298-301.
- Ambadkar, P.M. and Chauhan, B.C. 1979. Annual variations in the levels of total lipids, cholesterol, phospholipids and Δ^5 - 3β -hydroxysteroid dehydrogenase activity (complex of EC 1.1.1.51 and EC

- 5.3.3.1) in the ovaries of the Indian House Crow, *Corvus splendens* (Vieillot). *Pavo*, 17 (1and 2): 117-134.
- Ambadkar, P.M. and Padate, G.S. 1993. Seasonal variations in ascorbic acid and cholesterol contents of liver, blood and testes of two species of Mynas, *Acridotheres ginginianus* and *Sturnus pagodarum* as related to reproductive system. *Pavo*, 31(1and 2): 93-102.
 - Ambadkar, P.M. and Padate, G.S. 1993. Seasonal variations in ascorbic acid and cholesterol contents of liver, blood and ovaries of two species of Mynas, *Acridotheres ginginianus* and *Sturnus pagodarum* as related to reproductive system. *Pavo*, 33 (1and 2): 17-24.
 - Gordon, K. and Bardburly, P. 1977. Tissue Processing and Microtomy In : *Theory and Practice of Histological Techniques*. Ed: John D Bancroft and Alan Stevens, Churchill Livingstone, London.
 - Andersson, S. and Moghrabi, N. 1997. Physiology and molecular genetics of 17 beta-hydroxysteroid dehydrogenases. *Steroids*, 62(1): 143-147.
 - Andersson, S. 1995. Molecular genetics of androgenic 17beta-hydroxysteroid dehydrogenases. *J. Steroid. Biochem. Mol. Biol.*, 55(5-6): 533-534.
 - Andersson, S., Geissler, W.M., Patel, S. and Wu, L. 1995. The molecular biology of androgenic 17 beta-hydroxysteroid dehydrogenase. *J. Steroid. Biochem. Mol. Biol.*, 53(1-6) : 37-39.
 - Antoun, G.R., Brglez, I. and William son, D.G. 1985. A 17 beta-hydroxysteroid dehydrogenase of female liver cytosol. Purification and characterization of multiple forms of the enzyme. *Biochem.J.*, 225(2): 383-390.
 - Armstrong, D.G. 1982. 3 beta-hydroxy-delta 5-steroid dehydrogenase activity in the rapidly growing ovarian follicles of the domestic fowl (*Gallus domesticus*). *J.Endocrinol.*, 93(3) : 415-421.
 - Armstrong, D.G. 1985. Changes in 3 beta-hydroxy-delta 5-steroid dehydrogenase activity in granulosa tissue during the ovulatory cycle of the laying hen (*Gallus domesticus*). *J.Endocrinol.*, 106(3): 269-273.

- Armstrong, D.G. 1979. Subcellular distribution of delta 5-3-beta hydroxysteroid dehydrogenase in the granulosa cells of the domestic fowl (*Gallus domesticus*). *Biochem. J.*, 181(3):685-689.
- Artoni, S.M., Orsi, A.M., Carvalho, T.L. and Lopes, R.A. 1997. The annual testicular cycle of the domestic quail (*Coturnix coturnix japonica*). *Anat. Histol. Embryol.*, 26(4) : 337-339.
- Artoni, S.M., Orsi, A.M., Carvalho, T.L., Vicentini, C.A. and Stefanini, M.A. 1999. Seasonal morphology of the domestic quail (*Coturnix coturnix japonica*) testis. *Anat. Histol. Embryol.*, 28(4): 217-220.
- Asem, E., Marrone, B.L. and Hertelendy, F. 1985. Steroidogenesis in ovarian cells of the Japanese quail (*Coturnix coturnix japonica*). *Gen. Comp. Endocrinol.*, 60(3): 353-360.
- Asem, E.K. and Hertelendy, F. 1986. Steroidogenesis and cAMP production in isolated avian granulosa cells during follicular maturation: lack of positive correlation. *Acta Endocrinol.*, (copenh) 113(2): 289-297.
- Asnani,M.V., Yadav,P.L., Pilo,B. & Shah,R.V. 1973. Comparative histochemical studies on avian liver. 6. Distribution patterns of lipids and some enzymes in the liver of nectar feeder, Sunbird (*Nectarina asiatica*). *Pavo*,11(1&2)85-91.
- Assisi, L. Di Fiore, M.M., Lamanna, C. and Botte, V. 2000. Relationships between liver testosterone receptor isoforms and aromatase activity in female green frog, *Rana esculenta*. *Life Sci.*,67(4): 373-382.
- Baillie, A.H., Ferguson, M.M. and D. McK, Hart. 1966. *Developments in Steroid Histochemistry*, Academic Press, London and NY.
- Baker, M.E. 2001. Evolution of 17beta-hydroxysteroid dehydrogenases and their role in androgen, estrogen and retinoid action. *Mol. Cell. Endocrinol.*,171(1-2): 211-213.
- Balogh,K.1966.Histochemical demonstration of 3alpha-hydroxysteroid dehydrogenase activity. *J.Histochem.Cytochem.*,14: 77-83
- Balthazart, J., Tlem cani, O. and Ball, G.F. 1996. Do sex differences in the brain explain sex differences in the hormonal induction of

reproductive behaviour? What 25 years of research on the Japanese quail tells us. *Horm. Behav.*, 30(4): 627-661.

- Bell, D.J. and Freeman, B.M. 1971. Physiology and Biochemistry of the Domestic Fowl. Vol. 3, Academic Press Inc. London, NY.
- Belvedere, P., Dalla, Valle L., Vianello, S., Carnevali, O. and Colombo, L. 2001. Hormonal steroidogenesis in liver and small intestine of the green frog, *Rana esculenta* L. *Life Sci.*, 69(24): 2921-2930.
- Bhujle, B.V. and Nadkarni, V.B. 1975. Hydroxysteroid dehydrogenases in the kidney of white-breasted water hen, *Amaurornis phoenicurus chinensis* (Boddaert). *Acta histochem.*, 54(2): 284-289.
- Bhujle, B.V. and Nadkarni, V.B. 1978. Hydroxysteroid dehydrogenases in the interrenal gland and the ovary of stork-billed kingfisher, *Pelargopsis capensis* (Linn.): a histochemical study. *Gegenbaurs Morphol Jahrb.*, 124(6): 878-884.
- Bhujle, B.V., Nadkarni, V.B. and Rao M.A. 1979. Steroid synthesizing cellular sites in the ovary of the domestic pigeon *Columba livia* (Gmelin): a histochemical study. *Histochem. J.*, 11(3): 253-265
- Blem, C. R., 1976. Patterns of lipid storage and utilization in birds. *Am. Zool.*, 16 :671.
- Blomquist, C.H. 1995. Kinetic analysis of enzyme activities: prediction of multiple forms of 17 beta-hydroxysteroid dehydrogenase. *J. Steroid Biochem. Mol. Biol.*, 55(5-6): 515-524.
- Buchanan, K.L., Evans, M.R., Goldsmith, A.R., Bryant, D.M. and Rowe, L.V. 2001. Testosterone influences basal metabolic rate in male house sparrows: a new cost of dominance signaling? *Proc. R. Soc. Lond. B. Biol. Sci.*, 268(1474): 1337-1344.
- Cameron, C.B. 1964. The Liver and Steroid Hormone Action. In *The Liver: Morphology, Biochemistry, and Physiology* by Rouiller, C.H. Academic Press, NY and London.
- Chalana, R.K. and Guraya, S.S. 1979a. Morphological and histochemical observations on the primordial and early growing oocytes of crow

- (*Corvus splendens*) and myna (*Acridotheres tristis*). *Poult. Sci.*, 58(1): 225-231.
- Chalana, R.K. and Guraya, S.S. 1979b. Seasonal fluctuations and histochemical characteristics of the interstitial cells in the ovary of crow and myna. *Pavo*, 17 (1&2): 65-70.
- Clement, P.B. 1987. Histology of the ovary. *Am.J. Surg.Pathol.*, 11(4):277-303.
- Clinton, M. and Haines, L.C. 2001. An overview of factors influencing sex determination and gonadal development in birds. *EXS.* 91:97-115.
- Dawson, A. 1999. Photoperiodic control of gonadotropin-releasing hormones secretion in sexually breeding birds. *Neural Regulation in the Vertebrate Endocrine System*. Ed. By Prasada Rao and Peter Klwer. Academic / Plenum Publishers, NY.
- Degen, A.A., Weil, S., Rosenstrauch, A., Kam, M., and Dawson, A. 1994. Seasonal plasma levels of luteinizing and steroid hormones in male and female domestic ostriches (*Struthio camelus*). *Gen. Comp. Endocrinol.*, 93(1): 21-27.
- Degitar, W.G. and Kushlinsky, N.E. 2001. 3 alpha-hydroxysteroid dehydrogenase in animal and human tissues. *Biochem. (Mosc).*, 66(3):256-266.
- Delvillie, Y., Hendrick, J.C., Sulor,J. and Balthazart,J. 1984. Testosterone metabolism and testosterone-dependent characteristics in Japanese quail. *Physiol. Behav.*, 33 (5) : 817-823.
- Deray, A. 1976 Ultra structural aspects of cells with 3 beta-HSDH (delta 5-3betahydroxysteroid dehydrogenase) activity in female ducks. II. Female Barbary ducks. *C.R.Seances Soc. Biol. Fil.*, 170(3): 595-560.
- Deviche, P. and Sharp, P.J. 2001. Reproductive endocrinology of a free-living, opportunistically breeding passerine (white-winged crossbill, *Loxia leucoptera*). *Gen. Comp. Endocrinol.*, 123(3): 268-279.
- Di Fiore, M.M., Assisi, L. and Botte, V. 1998. Aromatase and testosterone receptor in the liver of the female green frog, *Rana esculenta*. *Life Sci.*, 62(21): 1949-1958.

- Dorrington, J.H. 1977. Steroidogenesis *in vitro*. Regulation of Oogenesis and Steroidogenesis. pp.366. In: The *Ovary* II edition Vol. III. Ed. Prof.Lord Zuckerman and Barbara J. Wier. Academic Press, NY.
- Dufort, I., Rheault, P., Huang, X.F., Soucy, P. and Luu-The V. 1999. Characteristics of a highly labile human type 5 17beta-hydroxysteroid dehydrogenase. *Endocrinol.*, 40(2):568-574.
- Elaroussi, M.A., Forte, L.R., Eber, S.L. and Bieller, H.V. 1993. Adaptation of the kidney during reproduction: role of estrogen in the regulation of responsiveness to parathyroid hormone. *Poult Sci.*, 72 (8): 1548-1556.
- Etches, J.R. 1996. Reproduction in Poultry. Cab International, Wallingford, U.K.
- Farner, D.S. and King,J.R. 1983. Avian Biology, Vol. VII Academic Press NY, London. Pp. 221-335.
- Farthing, M.J., Vinson, G.P., Edwards, C.R. and Dawson, A.M. 1982. Testosterone metabolism by the rat gastrointestinal tract, *in vitro* and *in vivo*. *Gut* , 23(3): 226-234.
- Fusani, L., Gahr, M. and Hutchison, J.B. 2001. Aromatase inhibition reduces specifically one display of the ringdove courtship behaviour. *Gen. Comp. Endocrinol.*,122(1): 23-30.
- Fusani, L., Hutchison, J.B. and Gahr, M. 2001a. Testosterone regulates the activity and expression of aromatase in the canary neostriatum. *J. Neurobiol.*,49(1): 1-8.
- Ghraf, R., Lax, E.R., Hoff, H.G. and Schriefers, H. 1975. The role of the gonads and the hypophysis in the regulation of hydroxysteroid dehydrogenase activities in rat kidney. *Hoppe Seylers Z. Physiol Chem.*,356(2): 135-142.
- Gilbert, A.L., Dale, R.R., Yu-Yan Yeh and E.K. O'Hea. 1975. Lipid biosynthesis in th echick. A consideration of site of synthesis. Influence of diet and possible regulatory mechanisms. *Poult.Sci.* 54: 1075-1093.

- Gilbert, A.B., Hardie, M. A., Perry, M.M., Dick, H. R. & Wells, J. W. 1980. Cellular changes in the granulose layer of the maturing ovarian follicle of the domestic fowl. *Brit.Poult.Sci.*, 21(4):257-263.
- Gomez, Y., Velazquez, P.N., Juarez-Oropeza, M.A. and Pedernera, E. 1998. Steroid metabolism in granulosa and theca interna cells from preovulatory follicles of domestic hen (*Gallus domesticus*). *Anim. Reprod. Sci.*, 52(1): 81-91.
- Gorman, L. Martyn, 1974. The endocrine basis of pair formation behaviour in male Eider, *Someteria mellissima*. *Ibis*, 116: 451-465.
- Guerriero, G. and Ciarcia, G. 2001. Progesterone receptor: some viewpoints on hypothalamic seasonal fluctuations in a lower vertebrate. *Brain Res. Brain Res. Rev.*, 37(1-3): 172-177.
- Gupta, S.K. and Maiti, B.R. 1986. Ovarian activity during the annual reproductive cycle and nesting cycle of a wild avian species, the Pied Myna (*Sturnus contra contra*). *Can. J. Zool.*, 65: 958-966.
- Guraya, S.S. and Chalana, R.K. 1976a. Morphology of the post-ovulatory follicle of House Sparrow. *Acta Biol.*, 27(4): 261-267.
- Guraya, S.S. and Chalana, R.K. 1976b. Histochemical observations on the seasonal fluctuations in the follicular atresia and interstitial gland tissue in the house sparrow ovary. *Poult. Sci.*, 55(5): 1881-1885.
- Guraya, S.S. 1976. Correlative cytological and histochemical studies on the avian oogenesis. *Z. Mikrosk Anat Forsch.*, 90 (1): 91-150.
- Gurr, E. 1956. A Practical Manual of Medicine and Biological Staining Techniques. Leonard Hill (Books) Ltd., London.
- Hagen-Jean, Himms. 1975. Role of the adrenal medulla in adaptation to cold. In: Handbook of Physiology. Section 7 : Endocrinology. Vol. VI Adrenal Gland. Ed. Greep, O.R. and Astwood, E.B. American Physiological Society, Washington D.C.
- Harpaz, S. and Zehava, Uni. 1999. Activity of intestinal mucosa brush border membrane in relation to the feeding habits of three aqua culture fish species. *Comp. Biochem and Physiol.*, Part A 124: 155-160.

- Hau, M., Wikelski, M., Soma, K.K. and Wingfield, J.C. 2000. Testosterone and year-round territorial aggression in a tropical bird. *Gen.Comp.Endocrinol.*, 117(1): 20-33.
- Hertelendy, F and Asem, E.K. 1984. Steroidogenesis in granulosa cells during follicular maturation: evidence for desensitization-resensitization during the ovulation cycle. *J. Exp.Zool.*, 232(3):513-520.
- Hiller, G. S. 1985. Sex steroid metabolism and follicular development in the ovary. In: *Oxford Reviews of Reproductive Biology*. Vol. 7 Ed. J.R.Clarke.
- High, O. Bayliss. 1977. Lipids. In: *Theory and Practise of Histological Techniques*. John D. Bancroft and Alan Stevens. Churchill Livingstone.
- Hodges, R.D. 1974. The Histology of the Fowl. Academic Press, London.
- Huang, E.S.R. and Nalbandov, A.V. 1979. Steroidogenesis of chicken granulosa and theca cells : *In vitro* incubation system. *Biol. Repro.*, 20: 442.
- Humphrey, C.D. and Turk, D.E. 1974. The ultrastructure of normal chick intestinal epithelium. *Poultry Sci.*, 53: 990-1000.
- Immelman, K. 1971. Ecological aspects of periodical aspects of reproduction. In : *Avian Biology* Vol I Ed. Farner & King. Academic Press. NY. London.
- Iyer, R.B., Binstock, J.M., Schwartz, I.S., Gordon, G.G., Weinstein, B.I. and Southren, A.L. 1992. Purification and properties of human hepatic 3 alpha-hydroxysteroid dehydrogenase. *J.Steroid. Biochem. Mol. Biol.*, 43(4): 343-349.
- Jacobsen, N.Q. 1975. Enzyme histochemical observations on the segmentation of the proximal tubules in the kidney of the female rat. *Histochemistry*, 43(1): 11-32.
- Jin, J.Z. and Lin, S.X. 1999. Human estrogenic 17beta-hydroxysteroid dehydrogenase: predominance of estrone reduction and its induction by NADPH. *Biochem. Biophys. Res. Commun.*, 259(2): 489-493.

- Jin, Y. and Penning, T.M. 2001. Steroid 5 α -reductase and 3 α -dehydroxysteroid dehydrogenase: key enzymes in androgen metabolism. *Best. Pract. Res. Clin. Endocrinol. Metab.*, 15(1): 79–94.
- John,T.M. & George , J. C. 1965. Seasonal variations in the glycogen and fat contents of the liver and pectoralis muscle of migratory wagtails. *Pavo*, 4 (1 & 2): 58-64
- John, T.M. and George, J.C. 1966. Certain histological and histochemical changes in the testis of migratory Wagtails towards migration. *Pavo*, 4 (1&2): 1-8.
- John,T.M. 1967. Histochemical observations on the lipid in the ovary of the migratory Wagtail, *Motacilla alba*, *Pavo*, 5(1&2): 52-56.
- Johnson, A.D.1970. Testicular lipids. In: "The Testis" Vol II Eds. Johnson,A.D., Gomes, W. R. & Vandemark,N.L. Academic press, NY & London.
- Johnson, A.L. 1986b. Reproduction in males. In: Avian *Physiology* IVth edition Ed. P.D.Sturkie, Springer–Verlag. NY.
- Johnson, A.L. 1986a. Reproduction in females. In: *Avian Physiology* IVth edition Ed. P.D.Sturkie, Springer–Verlag. NY.
- Kao, Y.C. and Lichtenberger, L.M. 1987. Localization of phospholipid-rich zones in rat gastric mucosa: possible origin of a protective hydrophobic luminal lining. *J.Histochem. Cytochem.*,35 (11): 1285-1298.
- Kao, Y.C. and Lichtenberger, L.M. 1990. A method to preserve extracellular surfactant -like phospholipids on the luminal surface of rodent gastric mucosa. *J. Histochem. Cytochem.*,38(3): 427-431.
- Kao, Y.C. and Lichtenberger, L.M. 1991. Phospholipid and neutral lipid-containing organelles of rat gastroduodenal mucous cells. Possible origin of the hydrophobic mucosal lining. *Gastroentrology*, 101(1): 7-21.
- Kellogg, D.A. and Glenner, G.G. 1960. Histochemical localization of human term placental 17beta-estradiol dehydrogenase reaction. *Nature*, 187: 763.

- Khera, S. & Kalsi, R. S. 1986. Diurnal time budgets of the Bank Myna *Acridotheres ginginianus* (Sturnidae) during prelaying, laying and incubation periods. *Pavo*, 25(1&2):25-32.
- Kim, I.S. and Yang, H.H. 2001. Seasonal changes of testicular weight, sperm production, serum testosterone, and in vitro testosterone release in Korean ring-necked pheasants (*Phasianus colchicus karpowi*). *J. Vet. Med. Sci.*, 63(2): 151-156.
- Kotak, V.C. 1979. Certain histoenzymological and endocrinological observations on the reproductive cycles of Indian Feral Blue Rock Pigeon, *Columba livia*. Ph.D. thesis submitted to the M.S.University of Baroda, Vadodara, India.
- Krishnaprasadan, T.N., Kotak,V.C., Sharp,P.J., Schmedemann,R. and Eberhard, H. 1988. Environmental and hormonal factors in seasonal breeding in free-living male Indian Rose-Ringed Parakeets (*Psittacula krameri*). *Hormones and Behaviour*.22 (4): 488-96.
- Kumar, S.B. and Kumar,V. 1993. Photoperiodic control of annual reproductive cycle in subtropical Brahminy Myna, *Sturnus pagodarum*. *Gen.Comp.Endo.*, 89: 149-160.
- Kusakabe, T., Maeda, M., Hosi, N., Sugino, T., Watanabe, K., Fukuda, T. and Suzuki, T. 2000. Fatty acid synthase is expressed mainly in adult hormone-sensitive cells or cells with high lipid metabolism and in proliferating fetal cells. *J.Histochem. Cytochem.*, 48(5): 613-622.
- Kwiterovich, P.O. Jr. 2000. The metabolic pathways of high-density lipoprotein, low-density lipoprotein and triglycerides : a current review. *Am. J. Cardiol.*, 86(12A): 5L-10L.
- Labrie, F., Luu-The V, Lin, SX., Labrie, C., Simard, J., Breton, R. and Belanger, A. 1997. The key role of 17 beta-hydroxysteroid dehydrogenase in sex steroid biology. *Steroids*, 62 (1): 148-158.
- Labrie, F., Luu-The, V., Lin, S.X., Simard, J. and Labrie, C. 2000. Role of 17 beta-hydroxysteroid dehydrogenase in sex steroid formation in peripheral intracrine tissues. *Trends Endocrinol. Metab.*, 11(10): 421-427.

- Lang, E., Lax, E.R. and Schirefers, H. 1986. 3 alpha, 3 beta and 17beta-hydroxysteroid dehydrogenase activities in the cytoplasmic and microsomal fractions of human liver. *Res. Exp.Med.(Berl.)*, 186(1): 47-59.
- Lateef, A., Akinola, Poutanen,M., Reijo, V.and Pirkho, V.1997. Expression of 17 β -hydroxysteroid dehydrogenase type1 and type 2, P₄₅₀ aromatase and 20 α -hydroxysteroid dehydrogenase enzymes in immature, mature and pregnant rats. *Endocrinol.*,138 (7): 2886-2892.
- Lau, P.C., Layne, D.S. and William son, D.G. 1982. A 3(17) alpha-hydroxysteroid dehydrogenase of female rabbit kidney cytosol. Purification and characterization of multiple forms of the enzyme. *J.Biol.Chem.*, 257(16): 9444-9449.
- Lax, E.R. 1987. Mechanisms of physiological and pharmacological sex hormone action on the mammalian liver. *J.Steroid Biochem.*, 27(4-6): 1119-1128.
- Lee, B.J. 1981. Prostaglandins. In: *Textbook of Endocrinology*. Ed. Robert H. Williams. W.B.Saunders Co.
- Lichtenberger, L.M., Grazizni, L.A., Dial, E.J., Buttler, B.D. and Hills, B.A. 1983.Role of surface-active phospholipids in gastric cytoprotection. *Science*, 219 (4590): 1327-1329.
- Lin, M. and Jones, R.C. Spatial arrangement of the stages of the cycle of the seminiferous epithelium in the Japanese Quail, *Coturnix coturnix japonica*. *J.Repro.Fert.*, 90: 361-367.
- Loft, B. and Murton, R.K. 1973. Reproduction in Birds. In: *Avian Biology* Vol. III Academic Press Inc. NY.
- Logan, C.A. and Wingfield, J.C. 1995. Hormonal correlates of breeding status, nest construction, and parental care in multiple-brooded Northern Mocking birds, *Mimus polyglottos*. *Horm. Behav.*,29(1): 12-30.
- Luu-The V, Dufort, I., Pelletier, G. and Labrie, F. 2001. Type 5 17 beta-hydroxysteroid dehydrogenase: its role in the formation of androgens in women. *Mol.Cell. Endocrinol.*,171(1-2):77-82.

- Malecki, I.A., Martin, G.B., O'Malley, P.J., Meyer, G.T., Talbot, R.T. and Sharp, P.J. 1998. Endocrine and testicular changes in a short-day seasonally breeding bird, the emu (*Dromaius novaehollandiae*), in southwestern Australia. *Anim. Reprod. Sci.*, 53(1-4): 143-155.
- Marrone, B.L. and Hertelendy, F. 1983. Steroid metabolism by avian ovarian cells during follicular maturation. *Biol. Reprod.*, 29(4): 953-962.
- Marrone, B.L. and Sebring, R.J. 1989. Quantitative cytochemistry of 3 beta-hydroxysteroid dehydrogenase activity in avian granulosa cells during follicular maturation. *Biol. Reprod.*, 40(5): 1007-1011.
- Martel, C., Melner, M.H., Gagne, D., Simard, J. and Labrie, F. 1994. Widespread tissue distribution of steroid sulfatase, 3beta-hydroxysteroid dehydrogenase/delta 5-delta 4 isomerase (3beta-HSD), 17beta-HSD 5 alpha-reductase and aromatase activities in the rhesus monkey. *Mol. Cell. Endocrinol.*, 104(1): 103-111.
- Mason, J.I., Keeney, D.S., Bird, I.M., Rainey, W.E., Morohashi, K., Leers-Sucheta, S. and Melner, M.H. 1997. The regulation of 3 beta-hydroxysteroid dehydrogenase expression. *Steroids*, 62(1): 164-168.
- Mc Indoe, W.M. 1971. Yolk Synthesis. In: *Physiology and Biochemistry of the Domestic Fowl*. Vol.3. Ed. Bell, D.J. and Freeman, B.M. Academic Press Inc. London, NY.
- Mensh-Nyagan, A.M., Feuilloley, M., Do-Rego, J.L., Marcual, A., Lange, C., Tonon, M.C., Pelletier, G. and Vaudry, H. 1996. Localization of 17beta-hydroxysteroid dehydrogenase and characterization of testosterone in the brain of the male frog. *Proc. Natl. Acad. Sci.*, 93(4): 1432-1438.
- Moghrabi, N., Head, J.R. and Andersson, S. 1997. Cell type-specific expression of 17 beta-hydroxysteroid dehydrogenase type 2 in human placenta and fetal liver. *J.Clin.Endocrinol. Metab.*, 82(11) : 3872-3878.
- Morton, M.L., Peterson, L.E., Burns, D.M. & Alban, N. 1990. Seasonal and age-related changes in plasma testosterone levels in mountain white crowned sparrows. *The Condor*, 92: 162-1173

- Murphy,D.J. and Vance, J. 1999. Mechanisms of lipid-body formation. *Trends Biochem.Sci.*, 24(3): 109-115.
- Murton, R.K. and Westwood,N.J. 1977. *Avian Breeding Cycles*. Clarendon Press Oxford, Oxford University Press.Oxford, U.K.
- Nagai, N. 1985. Electron microscopic study on the structure and the function of the granulosa cell in the human ovary—ultrastructure and 3 beta-hydroxysteroid dehydrogenase activity. *Nippon Sanka Fujinka Gakkai Zasshi.*,37(6):871-878.
- Nalbandov,A.V. 1970. *Reproductive Physiology*. IIInd ed. Taraporewala,B.D. & Sons Pvt. Ltd. Bombay.
- Naik, D.V., 1963. Seasonal variation in the metabolites of the liver of the Rosy Pastor, *Sturnus roseus* (Linnaeus). *Pavo*, 1(1): 44-47.
- Naik, D.V. and George,J.C. 1964. Certain cyclic histological changes in the testis of the migratory starling, *Sturnus roseus* (Linnaeus). *Pavo*, 2 (1): 48-54.
- Nair, N.G. 2001. Testosterone accelerates the onset of photorefractoriness in Baya Weaver, *Ploceus philippinus*. *Acta. Physiol. Hung.*, 88(1): 47-53.
- Nanjo, H., Terada, T., Umemura, T., Nishinaka, T., Mizoguchi, T. and Nishihara, T. 1992. Characterization of bovine liver cytosolic 3 alpha-hydroxysteroid dehydrogenase and its aldo-keto reductase activity. *Int.J.Biochem.*,24(5): 815-820.
- Nelson, J. R. 2000. An Introduction to Behavioural Endocrinology. II ed.; Sinauer Associates, Inc.
- Nishinaka, T., Kinoshita, Y., Terada, N., Terada, T., Mizoguchi, T. and Nishihara, T. 1991. 3-Keto-reductase activity of estradiol-17 beta dehydrogenase and its contribution to androgen metabolism. *J. Pharmacobiodyn.*,14(7): 413-419.
- Norman, W.A. and Litwack, G. 1997. Androgens. In: *Hormones*. IIInd ed. Academic Press.
- Oh, S.H., Oh, J.M., Kim, J.J., Choi, M.K., Park, S.T., Park, O.K. and Chung, Y.T. 1998. Immunohistochemical study of 3beta-hydroxysteroid

- dehydrogenase/delta5-delta4 isomerase in the rat cardiovascular system. *Arch Histol Cytol.*, 61(4): 297-303.
- Paolucci, M., Guerriero, G. and Ciarcia, G. 1999. Evidence of a progesterone receptor in the liver of the green frog, *Rana esculenta* and its down-regulation by 17 beta estradiol and progesterone. *J. Exp. Zool.*, 284 (7): 765-775.
 - Paolucci, M. and Botte, V. 1988. Estradiol-binding molecules in the hepatocytes of the female water frog, *Rana esculenta*, and plasma estradiol and vitellogenin levels during the reproductive cycle. *Gen Comp Endocrinol*, 70(3): 466-476.
 - Parasara, U.A. 1989. Role of avain predators in *Heliotheis armigera* Hubner. Management and breeding biology of Bank Myna *Acridotheres ginginianus*. Latham. M.Sc. Thesis, Gujarat Agricultural University, Sardarkrishnagar.
 - Paster, M.B. 1991. Avian reproductive endocrinology. *Vet. Clin. North Am. Small Pract.*, 21(6): 1343-1359.
 - Patel, J.R. 1991. Role of avain predators, other bioagents and cutting management in control of Lucerne (*Medicago sativa* Linneaus) pest and breeding biology of Brahminy myna, *Sturnus pagodarum* Gmelin. M.Sc. Thesis, Gujarat Agricultural University, Sardarkrishnagar .
 - Patel, M.M. and Ramachandran,A.V. 1988. Effect of pinealectomy on gonadal steroid dehydrogenase in the domestic pigeon, *Columba livia*. *J.Yamashina Inst. Ornith.*, 20 : 91-100.
 - Pearce, A. G. E. 1968. *Histochemistry : Theoretical and Applied*. Vol. I and II. J and A, Churchill Livingstone. Longman Group Ltd., London.
 - Peltoketo, H., Nokelainen, P. Piao, Y.S., Vihko, R. and Vihko, P. 1999. Two 17 beta-hydroxysteroid dehydrogenases (17HSDs) of estradiol biosynthesis : 17 HSD type 1 and type 7. *J. Steroid Biochem. Mol. Biol.*,69(1-6): 431-439.
 - Penfold, L.M., Wildt, D.E., Herozog, T.L., Lynch, W., Ware, L., Derrickson, S.E. and Monfort, S.L. 2000. Seasonal patterns of LH,

- testosterone and semen quality in the Northern pintail duck (*Anas acuta*). *Reprod. Fertil. Dev.*, 12(3-4): 229-235.
- Penning, T.M., Pawlowski, J.E., Schlegel, B.P., Jez, J.M., Lin, H.K., Hoog, S.S., Bennett, M.J. and Lewis, M. 1997a. Mammalian 3 alpha-hydroxysteroid dehydrogenases. *Steroids*, 62(5): 455-456.
 - Penning, T.M., Bennet, M.J., Smith-Hoog, S., Schlegel, B.P., Jez, J.M. and Lewis, M. 1997b. Structure and function of 3 alpha-hydroxysteroid dehydrogenase. *Steroids*, 62(1): 101-111.
 - Penning, T.M. 1999. Molecular determinants of steroid recognition and catalysis in aldo-keto reductases. Lessons from 3 alpha-hydroxysteroid dehydrogenase. *J. Steroid Biochem. Mol. Biol.*, 69(1-6): 211-225.
 - Penning, T.M., Smithgall, T.E., Askonas, L.J. and Sharp, R.B. 1986. Rat liver 3alpha-hydroxysteroid dehydrogenase. *Steroids*, 47(4-5): 221-247.
 - Perrins, C.M. and Birkhead, T.R. 1983. *Avian Ecology*. Blackie and Sons Ltd. Glasgow and London.
 - Phillips, J.G., Buttler, P.J. and Sharp, P.J. 1985. Physiological strategies in Avian Biology. I edition. Blackie and Sons Ltd. Glasgow and London.
 - Picariello, O., Botte, V. and Paolucci, M. 1982. Sex differences in liver non-specific esterases of the green frog, *Rana esculenta*. *Comp. Biochem. Physiol. B.*, 73(2): 269-274.
 - Pilo, B., Shah, R.V., Asnani, M.V. and Yadav, P.L. 1973a. Comparative histochemical studies on Avian Liver. 4. Relationship of dietary preference of various representative birds with the fat and glycogen contents and distribution pattern of histochemically demonstrable lipids in their livers. *Pavo*, 11(1&2): 12-20.
 - Pilo, B., Yadav, P.L., Asnani, M.V. and Shah, R.V. 1973b. Comparative histochemical studies on Avian Liver. 5. Relationships of dietary preferences with distribution patterns of lipase, esterase and beta-hydroxybutyrate dehydrogenase in the livers of various representative birds. *Pavo*, 11(1&2): 61-70.

- Pirog, E.C. and Collins, D.C. 1994. 3 alpha-hydroxysteroid dehydrogenase activity in rat liver and skin. *Steroids*, 59(4):259-264.
- Pirog, E.C. and Collins, D.C. 1999. Metabolism of dehydrotestosterone in human liver: importance of 3 alpha- and 3 beta-hydroxysteroid dehydrogenase. *J. Clin. Endocrinol. Metab.*, 84(9): 3217-3221.
- Popper and Schaffner. 1957. *Liver: Structure and Function*. The Blackiston Division, McGraw Hill Book Company, NY.
- Porter, T.E., Hargis, B.M., Silsby, J.L. and el Halawani, M.E. 1989. Differential steroid production between theca interna and theca externa cells : a three cell model for follicular steroidogenesis in avian species. *Endocrinol.*, 125(1):109-116.
- Potter, M.A. and Cockrem, J.F. 1992. Plasma levels of sex steroids in the Northern Island brown Kiwi (*Apteryx australis mantelli*) in relation to time of year and stages of breeding. *Gen. Comp. Endocrinol.*, 87(3):416-424.
- Pudney, J. 1995. Spermatogenesis in non-mammalian vertebrates. *Microsc. Res. Tech.*, 32(6):459-497.
- Qin, K.N. and Rosenfield, R.L. 2000. Expression of 17 beta-hydroxysteroid dehydrogenase type 5 in human ovary: a pilot study. *J. Soc. Gynecol. Investig.*, 7(1) : 61-64.
- Quinkler, M., Johanssen, S., Hazart, J. and Ball, G.F. 2000. Seasonal changes in courtship song and the median preoptic area in male European starlings (*Sturnus vulgaris*). *Horm. Behav.*, 38(4): 250-261.
- Rieters, L.V., Eens, M., Pinxten, R., and Ball, G.F. 2002. Seasonal changes in the densities of alpha (2) noradrenergic receptors are inversely related to changes in testosterone and the volumes of song control nuclei in male European starlings. *Horm. Behav.*, 44(1):63-74.
- Rogerson, F.M., LeHoux, J.G. and Mason, J.I. 1995. Expression and characterization of isoforms of 3 beta-hydroxysteroid dehydrogenase/delta 5--4-isomerase in the hamster. *J. Steroid Biochem. Mol. Biol.*, 55(5-6): 481-487.

- Rosenstrauch,A., Well,S., Degen,A.A. & Friedlander,M. 1998. Leydig cell functional structure and plasma androgen level during decline in fertility in aging rooster. *Gen.Comp.Endocrinol.*,109(2):251-258.
- Saha, Samita. 1984. Reproductive Histophysiology and control through chemosterilization of an Avian pest, *Lonchura malabarica*. Ph.D. Thesis submitted to University of Calcutta. West Bengal.
- Sakai, H. and Susumu, I. 1986. Annual cycles of plasma gonadotrophins and sex-steroids in Japanese Common Pheasants, *Phasianus colchicus veersicolor*. *Gen.Comp.Endo.*, 63: 275-283.
- Salomaa, S., Pekki,A., Sannisto,T., Ylikomi,T. and Tuohimaa,P. 1989. Progesterone receptor is constitutively expressed in chicken intestinal mesothelium and smooth muscle. *J.Steroid Biochem.*,34(1-6); 345-349.
- Sayler, A., Doud, A.J. and Wolfson, A. 1970. Influence of photoperiod on localization of Δ^5 -3beta-hydroxysteroid dehydrogenase in the ovaries of maturing Japanese quail. *Gen. Comp. Endocrinol.*,15 : 20-30.
- Schmitz, G. and Muller, G. 1991. Structure and function of lamellar bodies, lipid-protein complexes involved in storage and secretion of cellular lipids. *J.Lipid Res.*, 32(10) : 1539-1570.
- Schlinger, B.A. & Callard, G. V. 1990. Aromatisation mediates aggressive behaviour in quail. *Gen. Comp. Endocrinol.*,79 (1): 39 - 53.
- Shah, R.V., Patel, S.T. and Pilo, B. 1976a. Adaptive changes in the activities of acid and alkaline phosphatases in the alimentary canal of migratory birds, Wagtail (*Motacilla alba*) and Rosy Pastor (*Sturnus roseus*). *Pavo*, 13(1&2): 1-13.
- Shah, R.V., Patel. S.T. and Pilo B. 1976b. A histochemical study of isoenzymes of alkaline phosphatase in the intestine of migratory wagtail, *Motacilla alba*. *J.Anim.Morphol.Physiol.*,23(1&2):219-221.
- Siller,W.G. 1983. Structure of Kidney. In : *Physiology and biochemistry of the domestic fowl*. Vol 4. Ed. Bell & Freeman. Academic press, London.

- Smith, R.L., 1973. The elimination of drugs and toxic substances in bile. In : *The Excretory function of Bile*. Chapman and Hall, London.
- Soma, K.K., Tramontin, A.D. and Wingfield, J.C. 2000. Oestrogen regulates male aggression in the non-breeding season. *Proc. R. Soc. Lond. B. Biol. Sci.*, 267(1448): 1089-1096.
- Staub, N.L. and Madeleine De Beer. 1997. The role of androgens in female vertebrates. *Gen.Comp.Endo.*, 108:1-24.
- Stevens, A. 1977. The Hematoxylins. pp.125-138 In: *Theory and Practise of Histological Techniques*. 5th edition Ed: John D Bancroft and Alan Stevens, Churchill Livingstone, London.
- Stolz, A., Rahimi-Kaini, M., Amenis,D., Chan, E., Ronk, M. and Shively, J.E. 1991. Molecular structure of rat hepatic 3 alpha-hydroxysteroid dehydrogenase. A member of the oxidoreductase gene family. *J.Biol.Chem.*, 266(23): 15253-15257.
- Stolz, A., Takikawa, H., Ookhtens, M. and Kaplowitz, N. 1989. *Annu. Rev. Physiol.* 51, 166-177 as cited by Stolz *et al.*, *loc. cit.* 1994 *J.Lipid. Res.*, 35 (2) 239-247
- Stravitz, R.T., Vlahcevic, Z.R., Pandak, W.M., Stolz, A. and Hylemon, P.B. 1994. Regulation of rat hepatic 3 alpha-hydroxysteroid dehydrogenase in vivo and in primary cultures of rat hepatocytes. *J.Lipid. Res.*, 35 (2) 239-247.
- Stupans, I., Kong, S., Kirlich, A., McKinnon, R.A. and Murray, M. 2000. Testosterone dehydrogenase activity in koala liver: characterization of cofactor and steroid substrate differences. *Comp. Biochem. Physiol. C. Toxicol. Pharmacol.*, 125(2): 245-250.
- Summer, E.H.B. 1988. *Basic Histochemistry*. John Wiley and Sons. NY.
- Takikawa, H., Stolz, A., Sugiyama,Y., Yoshida, H., Yamanaka, M. and Kaplowitz, N. 1990a. Relationship between the newly identified bile acid binder and bile acid oxidoreductases in human liver. *J.Biol.Chem.* , 265(4): 2132-2136.
- Takikawa, H., Stolz, A., Kuroki, S. and Kaplowitz, N. 1990b. Oxidation and reduction of bile acids precursors by rat hepatic 3alpha-

- hydroxysteroid dehydrogenase and inhibition by bile acids and indomethacin. *Biochim. Biophys. Acta.*, 1043(2): 153-156.
- Targui, P., Ballarini, G., Pinotti, B., Franchini, A., Ottaviani, E. and Calandra, S. 1998. Secretion of apo B- and apo A-I containing lipoproteins by chick kidney. *J.Lipid Res.*, 39(4): 731-743.
- Thapliyal, J.P. 1978. Reproduction in Indian Birds. *Pavo*, 16 (Special Volume) (1 & 2): 151-161.
- Tingari, M.D. 1973. Histochemical localization of 3β - and 17β -hydroxysteroid dehydrogenases in male reproductive tract of the domestic fowl, *Gallus domesticus*. *Histochemie. J.*, 3: 57-65.
- Tsuneki,K.& Ichihara,K.1981. Electron microscope study of vertebrate liver innervation. *Arch. Histol. Jpn.*, 44(1):1-13.
- Ukena, K., Honda, Y., Inai, Y., Kohchi, C., Lea, R.W. and Tsutsui, K. 1999. Expression and activity of 3 beta-hydroxysteroid dehydrogenase/ Delta5-Delta4-isomerase in different regions of the avian brain. *Brain Res.*, 818(2) : 536-542.
- Usui, E., Okuda, K., Kato,Y. and Noshiro, M. 1994. Rat hepatic 3 alpha-hydroxysteroid dehydrogenase expression of cDNA and physiological function in bile acid biosynthetic pathway. *J.Biochem.(Tokyo)*. 115(2): 230-237.
- vander Molen, H.J. and Rommerts, F.F.G. 1981. Testicular Steroidogenesis. In: *The Testis*. Ed. H.Burger and D.deKretser, Raven Press, NY.
- Verhoeven, G., Heyns, W. and De Moor, P. 1976. Inter-conversion between 17β -hydroxy- 5α -androstan-3-one(5α -dihydrotestosterone) and 5α -androstane- 3α , 17β -diol in rat kidney: heterogeneity of 3α -hydrosteroid oxidoreductases. *Eur.J.Biochem.*,65(2) : 565-576.
- Vidal, S., Roman, A., Moya, L. and Kovacs, K. 2000. Expression of 3β -hydroxysteroid dehydrogenase/isomerase in the female rat pituitary. *J. Endocrinol.*,166 (1) : 95-101.

- Vihko, P., Isomaa, V. and Ghosh, D. 2001. Structure and function of 17 beta-hydroxysteroid dehydrogenase type 1 and type 2. *Mol. Cell Endocrinol.*, 171(1-2): 71-76.
- Vylitova, M. Miksik, I. and Pacha, J. 1998. Metabolism of corticosterone in mammalian and avian intestine. *Gen.Comp.Endo.*, 109: 315-324.
- Welty, J.C. and Baptista, L. 1990. *The Life of Birds*. IVth ed. Saunders College Publishing.
- Wattenberg, L.W. 1958. Microscopic histochemical demonstration of steroid 3beta-dehydrogenase in tissue section. *J.Histochem.Cytochem.*, 6:225-232.
- Wiebe, J.P., Buckingham, K.D., Zobell, R.L. and Hertelendy, F. 1990. Metabolism of progesterone by avian granulosa cells in culture. *J.Steroid Biochem. Mol. Biol.*, 37(1): 113-120.
- Wilson, S.C. and Sharp, P.J. 1976. Induction of Leutinizing hormone release by gonadal steroids in the ovariectomized domestic hen. *J.Endocrinol.*, 71:87.
- Wingfield, J.C., Lynn, S. and Soma, K.K. 2001. Avoiding the 'costs' of testosterone: ecological bases of hormone-behaviour interactions. *Brain Behav. Evol.*, 57(5): 239-251.
- Woods, J.E. and Domm, L.V. 1966. A histochemical identification of the androgen-producing cells in the gonads of the domestic fowl and albino rat. *Gen. Comp. Endocrinol.*, 7:559-570.
- Yamamoto, W., Stoltz, A., Takikawa, H., Sugimoto, M. and Kaplowitz, N. 1994. Distribution of 3 alpha-hydroxysteroid dehydrogenase (bile acid binder) in rat small intestine: comparison with glutathione S-transferase subunits. *J. Gastroent.*, 29 (2) : 115-119.