

Endogenous testicular D-aspartic acid regulates gonadal aromatase activity in boar

C. Lamanna¹, L. Assisi¹, V. Botte¹, M.M. Di Fiore²

1Department of Zoology, University of Naples 'Federico II', Naples; 2Department of Life Sciences, Second University of Naples, Caserta, Italy

D-aspartic acid (D-Asp), aromatase enzyme activity and the putative D-Asp involvement on aromatase induction have been studied in the testis of mature boars. The peroxidase-antiperoxidase and the indirect immunofluorescence methods, applied to cryostat and paraffin sections, were used to evaluate D-Asp and aromatase distributions. D-Asp level was dosed by an enzymatic method performed on boar testis extracts. Biochemical aromatase activity was determined by in vitro experiments carried out on testis extracts. D-Asp immunoreactivity was found in Leydig cells, and, to a lesser extent, in germ cells. Analogously, aromatase immunoreactivity was present in Leydig cells, but absent from seminiferous tubule elements. In vitro experiments showed that the addition of D-Asp to testicular tissue acetone powder induced a significant increase of aromatase activity, as assessed by testosterone conversion to 17 β -estradiol. Enzyme K_m was not affected by D-Asp (about 25 nM in control and D-Asp added tests). These findings suggest that D-Asp could be involved in the local regulation of aromatase in boar Leydig cells and intervenes in this organ's production of estrogens. (J. Endocrinol. Invest. 29: 141-146, 2006) ©2006, Editrice Kurtis