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JOURNAL ARTICLE

Identification of arginine esterase as the major androgen-dependent protein secreted by dog prostate and preliminary molecular characterization in seminal plasma

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This work was undertaken to determine the identity of the major androgen-dependent 15,000 molecular weight protein previously observed on SDS polyacrylamide gel electrophoresis of both dog prostate cytosol and dog seminal plasma. The protein was identified as one of the two chains of arginine esterase on the basis of its ability to bind 3H-diisopropylphosphofluoridate (DFP), an active site titrant of serine proteases. Furthermore, since the other polypeptide chain was heterogeneous, at least five distinct peaks of arginine esterase activity could be separated by chromatofocusing under nonreducing conditions. The molecular weight of the seminal plasma protein was estimated at 29,500 by Sephadex G-100 gel filtration, and at 25,000 by SDS polyacrylamide gel electrophoresis in the absence of mercaptoethanol. In the presence of mercaptoethanol, two major peaks were observed with molecular weights of 15,000 and 14,000. These results show that arginine esterase of dog seminal plasma is a serine protease composed of two different chains linked by disulfide bridges. One of the chains contains the reactive serine group. The other one is probably glycosylated since it presents several isoelectric points.