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JOURNAL ARTICLE

Search for androgen response elements in the proximal promoter of the canine prostate arginine esterase gene

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We have demonstrated the binding of the recombinant DNA binding domain of the rat androgen receptor to a DNA sequence of the canine prostate arginine esterase gene and have determined the functional significance of this sequence in transient transfection experiments. One of the binding sites was localized to a region (-172 to -148 bp) containing the sequence AGGACAACAGGTGTT that has 73% homology with the prostate-specific antigen (PSA) androgen response element (ARE) found at a similar position in the PSA promoter. Competition experiments showed that the androgen receptor had an approximately 100-fold more affinity for the PSA ARE than for the arginine sequence at -172 to -148. Transient cotransfection of 5'-deletion mutants of the arginine esterase promoter and 5'-flanking sequences driving the activity of the reporter gene along with the rat androgen receptor expression vector yielded only negligible inductions of chloramphenicol acetyl transferase (CAT) activity when dihydrotestosterone (DHT) was added to the culture medium. The introduction of one to four repeats of the -172 to -148 sequence of the arginine esterase gene upstream of the basal promoter of the mouse p12 gene in p12.108 also resulted in a minimal induction of CAT activity compared with a 10-fold induction of PSA AREs under similar conditions. These results suggest that the regulation of the canine arginine esterase gene by androgens is most probably achieved by mechanisms that differ from the ones prevailing with the human PSA and kallikrein-2 (hKLK2) genes.

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