

Cape Baboon CYP11B1: Molecular modeling of two CYP11B1 Isoforms.

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Two functional genes encoding baboon CYP11B1 have been isolated from adrenal cortex, which have been expressed in COS1 cells, demonstrating the possible existence of two isoforms of CYP11B1 in the Cape Baboon. The recombinant enzymes catalyzed the formation of significant amounts of corticosterone when the cells were incubated with DOC. Negligible amounts of 18-hydroxycorticosterone and aldosterone were detected. A comparative enzymatic activity study of two active recombinant baboon cDNAs has been undertaken with DOC and DCSOL as substrates. The K_m and V values for the expressed enzymes demonstrate that these two isoforms have different affinities for the two substrates. To further understand the differences in the 11 β -hydroxylation of these substrates, homology modeling was used to compare the three-dimensional structures of the enzymes. The amino acid residues contributing towards the respective activities have also been identified.