

Characterization of alkyldiacylglycerols from the Harderian gland

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Fatty acid and alkyl composition of 1-alkyl-2,3-diacylglycerols (ADG) in the Harderian gland of golden hamster were determined. Fatty acids of male ADG consisted of straight chain saturated acids. Both even- and odd-numbered acids were observed, indicating that acetyl- and propionyl-CoAs were equally used as primers in the fatty acid synthesis. In female ADG a large amount of iso- and anteiso-branched fatty acids were detected. Odd-numbered acids contained iso- together with anteiso-branchings, and even-numbered acids contained iso-branchings. These findings suggested that isobutyryl-, isovaleryl-, and 2-methylbutyryl-CoAs were used as primers in addition to acetyl- and propionyl-CoAs in fatty acid synthesis in the female gland. Such unusual primers are catabolic intermediates of valine, leucine, and isoleucine, respectively. Treatment with testosterone in female led to the disappearance of such branched chain fatty acids. Castration led to the appearance of iso- and anteiso-branched chain fatty acids. We conclude from these observations that the production of branched chain fatty acids in the Harderian gland of golden hamster is inhibited by testosterone at the step of isovaleryl-CoA dehydrogenase and 2-methyl branched chain acyl-CoA dehydrogenase. Thus androgens are essential to the control of the composition of ADGs in the golden hamster Harderian gland. This organ is a suitable model in the study of androgen receptor, and the application of such a unique ADG, bioactive lipid, will be the subject of a further communication.