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Effect of sulfonated steroids on steroidogenic cytochrome P450-dependent steroid hydroxylases

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Abstract

In the last decades, sulfonated steroids evolved from inactive metabolites intended for excretion to highly relevant compounds involved in many physiological processes. Investigations of the impact of sulfonated steroids on the steroid hormone biosynthesis revealed that, on the one hand, these can serve as substrate for steroidogenic cytochromes P450 and, on the other hand, these are able to influence the catalytic properties of these enzymes. In this review the relevance of sulfonated steroids for the steroid hormone biosynthesis will be discussed.

1. Introduction

Sulfonated steroids: formation and physiological effects

Sulfonated steroids were regarded for a long time to be inactive metabolites designated for renal or biliary excretion [1-5]. The classical endocrine dogma suggests that in order to interact with their corresponding receptor, steroids must be available in an unconjugated form. In mammalian organisms, however, sulfonated steroids often exist in notably higher concentrations than unconjugated steroids. Moreover, the level of some sulfonated steroids, such as estrone sulfate (E1S) [6, 7] and pregnenolone sulfate (PregS) [8], increases significantly during pregnancy (Table 1), pointing to

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