

Abstract

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Title of diploma thesis: Molecular mechanisms of interactions – interactions of constitutive androstane receptor with selected stilbene compounds

Constitutive androstane receptor (CAR), member of nuclear receptors family, is a major regulator of gene expression of phase I and II enzymes metabolizing endobiotics and xenobiotics. Changes in its activity can lead to pharmacokinetic drug interactions, ineffective treatment or higher toxicity of drugs simultaneously administered with CAR ligands. Recently another effects of this receptor, especially in homeostasis of bile acids, lipids and glucose have been discovered and CAR is now considered as a potential drug target for the treatment of metabolic diseases.

Stilbenes represent a small group of plant polyphenols with typical 1,2-diphenylethylene nucleus. The most famous member is resveratrol, which has attracted great attention thanks to its antioxidant, anti-inflammatory, antiproliferative and cardioprotective effects. Others stilbene compounds such as pterostilben, piceatannol or pinosylvin have shown similar health beneficial effects as well.

The aim of this diploma thesis was examination of twelve stilbenes as potentials ligands of the mouse CAR. I used gene reporter assay and HepG2 human hepatoma cells. Results of my experiments show that *trans*-2,4,3',5'-tetramethoxystilbene is a ligand of murine CAR and could be used in further studies on CAR functions in mouse models and contribute to deeper understanding of the role of CAR receptor in organism.