Abstract

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Title of diploma thesis: Interactions of resveratrol derivatives with PXR receptor

Derivatives of resveratrol belong between natural substances contained mainly in red wine and grapefruit. These compounds with stilbene-like structure show antioxidant activity. Pregnane X receptor (PXR) regulates expression of the most important biotransformation enzymes in human liver and intestine including cytochrome P450 3A4 (CYP3A4). Interaction of resveratrol and PXR have already been studied, but published data are contradictory.

In my diploma thesis, I studied interaction of resveratrol and its derivatives with PXR. For this purpose, gene reporter assay with quantitative real-time polymerase chain reaction (qRT-PCR) was introduced. It was not possible to conduct experiments in standard way because both resveratrol and its derivatives inhibit lusiferase activities. I studied also effects of resveratrol and its derivatives on expression of CYP3A4 mRNA on differentiated HepaRG cell line.

New method gene reporter method with qRT-PCR detection of luciferase was established on hepatoma cell line HepG2 transfected with CYP3A4 reporter construct. Concertation dependent effects of resveratrol and its derivatives were observed in all tested substances on luciferase in HepG2 cells and on the level of CYP3A4 in HepaRG cell line.

I can conclude that the new method gene reporter assay with qRT-PCR detection of luciferase was established and interactions of resveratrol derivatives with human PXR

were proved. Further experiments are necessary to reveal more details in this phenomenon.