

ABSTRACT

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Title of diploma thesis: Determination of the expression of enzymes DHRS7B and DHRS7C in human tissues

Dehydrogenase/reductase (SDR family) member 7B (DHRS7B) and 7C (DHRS7C) are human enzymes that belong to the short chain dehydrogenase/reductase (SDR) superfamily. This very old and extensive superfamily includes members, which play an important role in different physiological and pathological processes. In spite of that the SDR enzymes are currently more studied, still about half of these enzymes are only poorly characterized, such as DHRS7B and DHRS7C.

The aim of this study was the determination of the expression profiles of human enzymes DHRS7B and DHRS7C at mRNA and protein level and thus brings new knowledge of these enzymes. Expression of enzymes was tested in human tissues. RNA was isolated from the samples and used for transcription to cDNA. Obtained cDNA was utilized as a template for qPCR with fluorescence SYBR GREEN I detection. Determination of enzymes at protein level was done in homogenates of human tissues by using a Western blotting with chemiluminescence detection.

The level of expression mRNA DHRS7B was strongest in testes and a slightly weaker expression was detected in skeletal muscle, kidney, brain, adrenal glands, prostate, retina, thyroid and subcutaneous fat. Expression of other tissues (uterus, liver, spleen, pancreas, heart, small intestine, large intestine, visceral fat, ovaries and stomach) was very low. The expression of DHRS7B at protein level was detected in brain and pancreas. The highest expression of mRNA DHRS7C was in skeletal muscle, following very low expression of heart. The level of the expression in other tissues (uterus, liver, kidney, brain, adrenal glands, prostate, retina, spleen, pancreas, thyroid, small intestine, large intestine, subcutaneous fat, visceral fat, ovaries, testes and stomach) was insignificant. The expression of DHRS7C at protein level was observed in skeletal muscle, heart and thyroid.