

Abstract

MTH1 is a protein belonging to the NUDIX hydrolase family. It helps cancer cells to cope with oxidative stress caused by tumor transformation. MTH1 hydrolases oxidized forms of deoxyribonucleotidetriphosphates (dNTPs), thus protects the cell from mutations, helps to maintain genomic integrity and prevents senescence and cell death. Unlike cancer cells, for which MTH1 activity is essential, its expression is very low in healthy cells. Therefore, MTH1 was considered as a potential therapeutic target for the cancer treatment. Several generations of MTH1 inhibitors have been developed. However, the results of testing their anticancer activity were often contradictory. The aim of this work will be to show the function of MTH1 protein, its role in cancer cells and to discuss the path that led to the development of successful inhibitors.

Key words: MTH1, cancer, oxidative stress, 8-oxo-dGTP, MTH1 inhibitors