

Overexpression of P-glycoprotein in L1210/VCR is associated with changes of endoplasmatic reticulum

Mário Šereš, Eva Poláková, Oľga Križanová, Marta Šírová, Albert Breier, Zdenka Sulová

Institute of Molecular Physiology and Genetics, Slovak Academy of Sciences, Bratislava, Slovakia.

E-mail: mario.seres@savba.sk

A multidrug resistant L1210/VCR cell, which expresses an abundant amount of P-glycoprotein (Pgp), we found to be resistant to thapsigargin, an inhibitor of SERCA (sarco/endoplasmic reticulum calcium pump). We have studied the possible differences among L1210 and L1210/VCR cells in expression of endoplasmic reticulum proteins involved in calcium homeostasis. Thapsigargin influenced expression of calnexin (CNX) in L1210 and L1210/VCR cells. Amounts of mRNA encoding both calcium release channels (ryanodine receptor channels – RyR and inositol 1,4,5 triphosphate receptor channels – IP3R) were found to be at similar levels in sensitive and resistant cells. However, mRNAs encoding IP3R1 or 2 were decreased in resistant cells cultivated in the presence of vincristine (VCR), while mRNA encoding RyR remained unchanged. The amount of mRNA for SERCA2 was decreased in resistant cells when compared with sensitive cells. This decrease was more pronounced when resistant cells were cultivated in the presence of VCR. CNX was found to be less expressed at the protein level in resistant as in sensitive cells. The level of mRNA encoding CNX was decreased only when resistant cells were cultivated in the presence of VCR. CNX was found to be associated with immature Pgp in resistant cells.

Thus, differences exist between sensitive and resistant cells in the expression of endoplasmic reticulum proteins involved in the control of intracellular calcium homeostasis or calcium-dependent processes.

Supported by: APVV-0084-07 a VEGA 2/7122, 2/0155/09.