

Expression of Functionally P-Glycoprotein in MA104 Kidney Cells

Márcia A. M. Capella^a, Monique Orind^b, Marcelo Marcos Morales^a,
Vivian M. Rumjanek^b and Aníbal Gil Lopes^a

^a Laboratório de Fisiologia Renal, Instituto de Biofísica Carlos Chagas Filho

^b Departamento de Bioquímica Médica, Instituto de Ciências Biomédicas,
Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

Z. Naturforsch. **54c**, 119–127 (1999); received July 17/September 22, 1998

Kidney Cells, Western Blotting, mRNA, Rhodamine 123, Flow Cytometry,
Multidrug Resistance

Rhesus monkey kidney MA104 cells are a polarized epithelium with some unusual characteristics, including a resistance to ouabain, although their Na⁺-K⁺-ATPase has normal affinity with this drug. This work suggests that MA104 cells have high expression of functionally P-glycoprotein in their membranes. This was established using four complementary methods to investigate the expression and function of P-glycoprotein in these cells. MA104 cells were strongly resistant to vincristine, which could be reversed by three known P-glycoprotein modulators: verapamil, cyclosporin A and trifluoperazine. In addition, MA104 cells accumulate little rhodamine 123, and the incubation with verapamil increased this accumulation. The *mdr1*-mRNA was detected by reverse transcription-polymerase chain reaction and a subcloned 283-bp product was identified. Its nucleotide sequence was compared with the related region of human *mdr1*, showing a high identity (96%) between the two sequences. The expression of P-glycoprotein in the cell membrane was observed by Western blot and immunofluorescence. The results taken together suggest that MA104 cells intrinsically have a high expression of functionally P-glycoprotein in their membranes.

Reprint requests to Aníbal Gil Lopes. Fax: 55 (21) 280-8193, e-mail: agilopes@chagas.biof.ufrj.br