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Monitoring of MRP-like Activity in Human Erythrocytes: Inhibitory Effect of Isoflavones

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A method to fluorometrically monitor efflux of 2', 7'-bis-(carboxypropyl)-5(6)-carboxyfluorescein (BCPCF) from human erythrocytes was developed. Genistein, daidzein, sophoraisoflavone A, and licoisoflavone A induced 50% inhibition (IC₅₀) of BCPCF efflux at 15-70 μM. The IC₅₀ value of the most efficient isoflavone, licoisoflavone A (15-25 μM), was comparable to that of indomethacin (~ 10 μM) and markedly lower than for probenecid (100-200 μM), both known MRP1 inhibitors. Our results indicate that the human erythrocyte is a useful cell model in screening potential MRP inhibitors, that BCPCF is a good substrate for MRP, and that some isoflavones at low concentrations inhibit MRP-mediated efflux.