

TITLE

BIOAVAILABILITY OF FLAVONOIDS: IN VITRO METHODS FOR ASSESSING BILITRANSLOCASE- MEDIATED MEMBRANE TRANSPORT

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Bilitranslocase (TC 2.A.65.1.1) is a plasma membrane transporter expressed in the gastro-intestinal epithelium (luminal side), the liver and kidney (vascular side) (1) and in the vascular endothelium (2). It transports bilirubin, flavonoids and other organic anions. By using specific anti-sequence bilitranslocase antibodies targeting extracellular epitopes critical for the carrier function, we can investigate both the tissue and cellular localisation of the protein and its function in absorption and tissue distribution of flavonoids, by a system of in vitro methods featured by increasing structural complexity: i) plasma membrane vesicles, ii) cell cultures, iii) tissue fragments, and iv) isolated organs. The best example of implementation of this chain of in vitro methods is the cardiovascular system, where consistent observations were obtained throughout the chain. It can be concluded that the first method, i.e. a bilitranslocase-specific functional assay (3) in membrane vesicles where potential ligands (competitive and non-competitive inhibitors) are identified, yields data predictive of bilitranslocase function in organs. This approach can be helpful for exploiting bilitranslocase as a membrane transporter in drug targeting and development.

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- 2 Maestro A, Terdoslavich M, Vanzo A, Kuku A, Tramer F, Nicolin V, et al.. *Cardiovasc Res.* 2009 Aug 25.
- 3 Passamonti S, Tramer F, Petrusa E, Braidot E, Vianello A. In: *Fett-Neto AG*, editor. *Plant Secondary Metabolism Engineering Methods and Applications.* Totowa, NJ: Humana Press Inc.; 2010.