EXPRESSION OF A DUODENAL IRON-REGULATED TRANSPORTER, IREG1, IN XENOPUS LAEVIS OOCYTES

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Significant progress has been made, in the last years, in identifying molecules involved in iron absorption; Ireg1 cDNA encodes for a protein that localises to the basolateral membrane of polarised epithelial cells (A.T. M[c]Kie et al., Molecular Cell, 5: 299-309, 2000). To examine the function of Ireg1 as an exit system for iron we used the *Xenopus laevis* oocyte expression system. Defolliculated oocytes were injected with DCT1 (Divalent Cation Transporter) plus Ireg1 cRNAs, for the efflux experiments, and with DCT1, Ireg1 cRNA or water for control experiments. Oocytes were loaded with ^{55}Fe(II) by DCT1 and iron efflux was determined by measuring the appearance of the Fe^{55} in the incubation media in the presence of ceruloplasmine (Cp) and apotransferrin (Tf) following 30 min preloading. Ireg1 is highly expressed in the plasma membrane of Ireg1-injected oocytes. Iron uptake in DCT1 plus Ireg1-injected oocytes did not significantly differ from DCT1 alone injected oocytes. Fe efflux in the absence of Cp and Tf was not different from background both for DCT1 alone and DCT1 plus Ireg1-injected oocytes. The presence of Cp and Tf did not affect the efflux of oocytes expressing DCT1 while it was increased 2.5 fold in DCT1+Ireg1-oocytes. Using a 10 fold higher iron concentration in the uptake solution, efflux increased approximately 8 fold in DCT1+ Ireg1-injected oocytes only. We demonstrated that Ireg1 can mediate iron efflux across membranes by a mechanism which requires a ferroxidase activity and Tf as an iron acceptor.

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