SELENOPROTEINS IN THE CESTODE PARASITE *ECHINOCOCCUS GRANULOSUS*

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Selenocysteine (Sec) is the 21st amino acid. It is encoded by a UGA^{Sec} codon and incorporated into protein synthesis by a matching tRNA and a decoding machinery that involves a Sec insertion sequence (SECIS element) present at the 3´-end of selenoprotein mRNAs. The selenoproteome is a discrete set of proteins which differs among taxa; in eukaryotes, most selenoproteins are antioxidant enzymes in which Sec is part of the redox active site. We have initiated the characterization of the selenoproteins expressed by *Echinococcus granulosus*. The transcriptome of *E. granulosus* was searched for selenoproteins using an algorithm that allows prediction of SECIS elements, and searching for Sec-containing homologs of known eukaryotic selenoproteins. These searches revealed that in addition to the known selenoprotein thioredoxin glutathione reductase (TGR), *E. granulosus* encodes Sec-containing glutathione peroxidase (GPx) and selenoprotein W (SelW). The SECIS elements present in these mRNAs conform to the eukaryotic canon. *In vitro* metabolic labeling of larval worms and hydatid cysts with radioactive ^{75}Se revealed the presence of five bands, three of them putatively attributable to TGR, GPx and SelW. We were able to produce active Sec-containing recombinant TGR in *Escherichia coli* by placing a bacterial SECIS element downstream of the C-terminal UGA^{Sec} codon, and are currently working on expression of SelW and GPx using bacterial and eukaryote expression strategies.