Ubiquitin carboxy-terminal hydrolase L1

UCH-L1 is a member of a gene family whose products hydrolyze small C-terminal adducts of ubiquitin to generate the ubiquitin monomer. Expression of UCH-L1 is highly specific to neurons and to cells of the diffuse neuroendocrine system and their tumors. It is abundantly present in all neurons (accounts for 1-2% of total brain protein), expressed specifically in neurons and testis/ovary.

The catalytic triad of UCH-L1 contains a cysteine at position 90, an aspartate at position 176, and a histidine at position 161 that are responsible for its hydrolase activity.

Traumatic brain injury (TBI) is frequently associated with abnormal blood-brain barrier function, resulting in the release of factors that can be used as molecular biomarkers of TBI, among them GFAP, UCH-L1, S100B, and NSE. Although many experimental studies have been conducted, clinical consolidation of these biomarkers is still needed to increase the predictive power and reduce the poor outcome of TBI. Interestingly, several of these TBI biomarkers are oxidatively modified to carbonyl groups, indicating that markers of oxidative stress could be of predictive value for the selection of therapeutic strategies [1)].

1)
Mendes Arent A, de Souza LF, Walz R, Dafre AL. Perspectives on Molecular Biomarkers of Oxidative Stress and Antioxidant Strategies in Traumatic Brain Injury. Biomed Res Int. 2014;2014:723060. Epub 2014 Feb 13. Review. PubMed PMID: 24689052.