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Title:	Pyroglutamic acid: Throwing light on a lightly studied metabolite.
Authors:	Bachhawat, A.K. (/jspui/browse?type=author&value=Bachhawat%2C+A.K.)
Keywords:	γ -Glutamyl cycle 5-oxoproline
Issue Date:	2012
Citation:	Current Science, 102 (2), pp. 288-297.
Abstract:	Pyroglutamic acid or 5-oxoproline is the cyclic lactam of glutamic acid. Its presence in living cells has been reported from archaeobacteria to humans, and its occurrence in living cells has been known for over a century. Despite its almost ubiquitous presence, the role of pyroglutamic acid in living cells is poorly understood. Pyroglutamic acid is found as an N-terminal modification in many neuronal peptides and hormones that also include the accumulating peptides in Alzheimer's disease and familial dementia. The modification is also observed in proteins that include many antibodies, some enzymes and structural proteins. The modification in proteins has been shown to contribute to both the structural and activity-related properties of the proteins. Pyroglutamate also exists as a free metabolite in living cells. In several genetic disorders of humans, and in an acetaminophen-induced metabolic disorder, high levels of pyroglutamic acid are secreted in the urine in what is known as 5-oxoprolinuria. The proposed functions of free pyroglutamic acid include its role as an analogue or reservoir of glutamate, as well as other functions unique to it, that includes a possible role in osmoprotection. This short review tries to capture our current understanding of pyroglutamic acid in living cells.
Description:	Only IISERM authors are available in the record.
URI:	www.currentscience.ac.in/cs/Volumes/102/02/0288.pdf (www.currentscience.ac.in/cs/Volumes/102/02/0288.pdf)
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