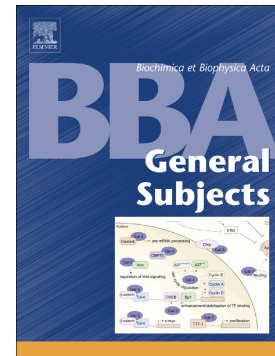


Accepted Manuscript

S-glutathionylation of glyceraldehyde-3-phosphate dehydrogenase induces formation of C150-C154 intrasubunit disulfide bond in the active site of the enzyme

K.V. Barinova, M.V. Serebryakova, V.I. Muronetz, E.V. Schmalhausen



PII: S0304-4165(17)30292-1
DOI: doi: [10.1016/j.bbagen.2017.09.008](https://doi.org/10.1016/j.bbagen.2017.09.008)
Reference: BBAGEN 28941

To appear in:

Received date: 24 March 2017
Revised date: 11 September 2017
Accepted date: 15 September 2017

Please cite this article as: K.V. Barinova, M.V. Serebryakova, V.I. Muronetz, E.V. Schmalhausen, S-glutathionylation of glyceraldehyde-3-phosphate dehydrogenase induces formation of C150-C154 intrasubunit disulfide bond in the active site of the enzyme, (2017), doi: [10.1016/j.bbagen.2017.09.008](https://doi.org/10.1016/j.bbagen.2017.09.008)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

S-glutathionylation of glyceraldehyde-3-phosphate dehydrogenase induces formation of C150-C154 intrasubunit disulfide bond in the active site of the enzyme

Barinova K.V.^{1,2}, Serebryakova M.V.¹, Muronetz V.I.^{1,2}, Schmalhausen E.V.^{1*}

¹Belozersky Institute of Physico-Chemical Biology, Lomonosov Moscow State University, Moscow, 119234, Russia;

²Faculty of Bioengineering and Bioinformatics, Lomonosov Moscow State University, Moscow, 119234, Russia.

*Corresponding author: Belozersky Institute of Physico-Chemical Biology, Lomonosov Moscow State University, Moscow, 119234, Russia; E.mail: shmal@belozersky.msu.ru

Abstract

Background

Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) is a glycolytic protein involved in numerous non-glycolytic functions. S-glutathionylated GAPDH was revealed in plant and animal tissues. The role of GAPDH S-glutathionylation is not fully understood.

Methods

Rabbit muscle GAPDH was S-glutathionylated in the presence of H₂O₂ and reduced glutathione (GSH). The modified protein was assayed by MALDI-MS analysis, differential scanning calorimetry, dynamic light scattering, and ultracentrifugation.

Results

Incubation of GAPDH in the presence of H₂O₂ together with GSH resulted in the complete inactivation of the enzyme. In contrast to irreversible oxidation of GAPDH by H₂O₂, this modification could be reversed in the excess of GSH or dithiothreitol. By data of MALDI-MS analysis, the modified protein contained both mixed disulfide between Cys150 and GSH and the

Download English Version:

<https://daneshyari.com/en/article/8300972>

Download Persian Version:

<https://daneshyari.com/article/8300972>

[Daneshyari.com](https://daneshyari.com)