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[Review](#) [Mol Aspects Med.](#) 2009 Feb-Apr;30(1-2):1-12. doi: 10.1016/j.mam.2008.08.006.

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Glutathione: overview of its protective roles, measurement, and biosynthesis

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Abstract

This review is the introduction to a special issue concerning, glutathione (GSH), the most abundant low molecular weight thiol compound synthesized in cells. GSH plays critical roles in protecting cells from oxidative damage and the toxicity of xenobiotic electrophiles, and maintaining redox homeostasis. Here, the functions and GSH and the sources of oxidants and electrophiles, the elimination of oxidants by reduction and electrophiles by conjugation with GSH are briefly described. Methods of assessing GSH status in the cells are also described. GSH synthesis and its regulation are addressed along with therapeutic approaches for manipulating GSH content that have been proposed. The purpose here is to provide a brief overview of some of the important aspects of glutathione metabolism as part of this special issue that will provide a more comprehensive review of the state of knowledge regarding this essential molecule.

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Figures

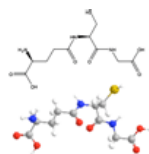


Fig. 1 Glutathione structure. A stereochemical and...

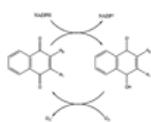


Fig. 2 Redox cycling of 1,4-naphthoquinones. A...



Fig. 3 Reactions of glutathione with hypochlorous...

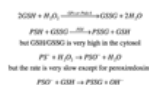


Fig. 4 Formation of protein mixed disulfide....

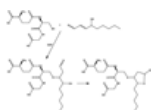


Fig. 5 Glutathione conjugations with 4-hydroxynonenal.

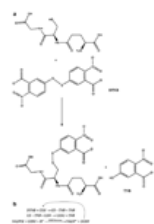


Fig. 6 Measurements of thiols. (a) Reaction...

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