

Featured Research Studies

Evid Based Complement Alternat Med. 2008 Mar;5(1):27-35.

The treatment of pulmonary diseases and respiratory-related conditions with inhaled (nebulized or aerosolized) glutathione.

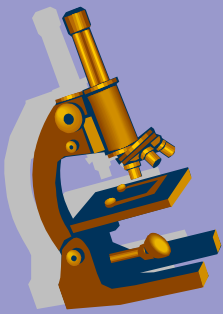
Prousky J.

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Reduced glutathione or simply glutathione (gamma-glutamylcysteinylglycine; GSH) is found in the cytosol of most cells of the body. GSH in the epithelial lining fluid (ELF) of the lower respiratory tract is thought to be the first line of defense against oxidative stress. Inhalation (nebulized or aerosolized) is the only known method that increases GSH's levels in the ELF. A review of the literature was conducted to examine the clinical effectiveness of inhaled GSH as a treatment for various pulmonary diseases and respiratory-related conditions. This report also discusses clinical and theoretical indications for GSH inhalation, potential concerns with this treatment, its presumed mechanisms of action, optimal doses to be administered and other important details. Reasons for inhaled GSH's effectiveness include its role as a potent antioxidant, and possibly improved oxygenation and host defenses. Theoretical uses of this treatment include Farmer's lung, pre- and postexercise, multiple chemical sensitivity disorder and cigarette smoking. GSH inhalation should not be used as a treatment for primary lung cancer. Testing for sulfites in the urine is recommended prior to GSH inhalation. Minor side effects such as transient coughing and an unpleasant odor are common with this treatment. Major side effects such as bronchoconstriction have only occurred among asthma patients presumed to be sulfite-sensitive. The potential applications of inhaled GSH are numerous when one considers just how many pulmonary diseases and respiratory-related conditions are affected by deficient antioxidant status or an over production of oxidants, poor oxygenation and/or impaired host defenses. More studies are clearly warranted.

PMID: 18317545 [PubMed - in process]

<http://www.ncbi.nlm.nih.gov/pubmed/18317545?dopt=AbstractPlus>



Arthritis Rheum. 2008 Mar;58(3):903-7.

Dynamic levels of glutamate within the insula are associated with improvements in multiple pain domains in fibromyalgia.

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OBJECTIVE: Fibromyalgia (FM) is a chronic widespread pain condition that is thought to arise from augmentation of central neural activity. Glutamate (Glu) is an excitatory neurotransmitter that functions in pain-processing pathways. This study was carried out to investigate the relationship between changing levels of Glu within the insula and changes in multiple pain domains in patients with FM.

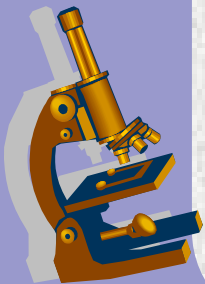
METHODS: Ten patients with FM underwent 2 sessions of proton magnetic resonance spectroscopy (H-MRS) and 2 sessions of functional magnetic resonance imaging (fMRI), each conducted before and after a nonpharmacologic intervention to reduce pain. During H-MRS, the anterior and posterior insular regions were examined separately using single-voxel spectroscopy. The levels of Glu and other metabolites were estimated relative to levels of creatine (Cr) (e.g., the Glu/Cr ratio). During fMRI, painful pressures were applied to the thumbnail to elicit neuronal activation. Experimental pressure-evoked pain thresholds and clinical pain ratings (on the Short Form of the McGill Pain Questionnaire [SF-MPQ]) were also assessed prior to each imaging session

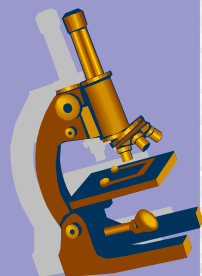
RESULTS: Both experimental pain ($P = 0.047$ versus pretreatment) and SF-MPQ-rated clinical pain ($P = 0.043$ versus pretreatment) were reduced following treatment. Changes from pre- to posttreatment in Glu/Cr were negatively correlated with changes in experimental pain thresholds ($r = -0.95$, $P < 0.001$) and positively correlated with changes in clinical pain ($r = 0.85$, $P = 0.002$). Changes in the fMRI-determined blood oxygenation level-dependent effect (a measure of neural activation) were positively correlated with changes in Glu/Cr within the contralateral insula ($r = 0.81$, $P = 0.002$).

CONCLUSION: Changes in Glu levels within the insula are associated with changes in multiple pain domains in patients with FM. Thus, H-MRS data may serve as a useful biomarker and surrogate end point for clinical trials of FM.

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<http://www.ncbi.nlm.nih.gov/pubmed/18311814?dopt=AbstractPlus>





Sci Total Environ. 2008 Mar 1 [Epub ahead of print]

The conundrum of unmeasured confounding: Comment on: "Can some of the detrimental neurodevelopmental effects attributed to lead be due to pesticides? by Brian Gulson"

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The problem described by Dr. Brian Gulson - confounding by unmeasured exposures to pesticides - is only the most recent in a series of potential confounders cited to explain the observed effect of lead on children's intellectual abilities or behavioral problems. Despite the persistent problem of unmeasured confounders, there are several lines of evidence implicating lead as a toxicant at blood lead levels <10 mug/dL. First, in striking contrast with pesticides, there is considerable evidence from numerous studies linking low-level lead exposure with cognitive deficits and behavioral problems, even after controlling for a variety of potential confounders. Second, the consistency of evidence from diverse cohorts and distinct, if not always directly measured potential confounders - enhances our confidence that the lead effect observed at blood lead levels <10 mug/dL is not attributable to unmeasured confounders. Third, in our reanalysis of the Rochester Lead Study, the inclusion of parent-reported mouthing behaviors and breastfeeding status did not attenuate the effect of lead exposure on children's intellectual function. Finally, although we can never entirely dismiss unmeasured confounding in observational studies, we can rely on experimental studies of lead-exposed animals to confirm that lead is a toxicant. Thus, while we must remain vigilant for unmeasured or poorly measured confounders, it is crucial to balance the endless search for confounders with the evidence of toxicity and the need to take action to protect public health. The alternative, to perpetually permit children to be exposed to lead and other emerging toxicants, is both absurd and unacceptable.

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<http://www.ncbi.nlm.nih.gov/pubmed/18316114?dopt=AbstractPlus>

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