

## Neurodegenerative Disorders: GSH Prevention of Neuronal Death.

GSH is an important protector of energy metabolism (mitochondrial function) during periods of oxidative stress.<sup>54</sup> Dopaminergic neurons are very sensitive to changes in the internal oxidant buffering capacity of the cell caused by reductions in GSH levels that can lead to disruption of calcium homeostasis and cell death.<sup>55</sup> GSH, but not vitamins C or E, protects human neural cells from dopamine-induced apoptosis.<sup>56</sup> Notably, dopamine treatment during GSH depletion is documented to produce defects in psychomotor behavior in a laboratory animal model.<sup>57</sup>

Oxidative stress has been implicated in various neurodegenerative disorders and may be a common mechanism underlying various forms of cell death including excitotoxicity, apoptosis and necrosis. Bains and Shaw<sup>58</sup> present evidence for a role of oxidative stress and diminished GSH in Lou Gehrig's disease (ALS), Parkinson's disease, and Alzheimer's disease. GSH modulation may prove to be beneficial in spinal cord injury,<sup>59</sup> multiple sclerosis<sup>60</sup> and stroke.<sup>61,62</sup> Since cysteine supplementation increases GSH it may hold promise as a method to modulate neurodegenerative diseases.

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