# Neutralizing Free Radical Peroxynitrite Using Antioxidants

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Abstract Produced by traumatic brain injury such as concussions, free radicals cause many problems when released in the brain including memory loss, attention problems, depression, and disorientation. To prevent these long term issues, free radicals need to be eliminated by using antioxidants, which can stop the effects of the free radicals if they are administered quickly. I hypothesized that if antioxidants Vitamin D3, Lipoic acid, and Glutathione are separately added to a mixture of Peroxynitrite, Arachidonic acid, and Phosphate Buffered Saline, then Lipoic acid will work best to eliminate free radicals. I used these three antioxidants, mixed them with Peroxynitrite, Arachidonic acid, and Phosphate Buffered Saline. A Malondialdehyde test kit was used to determine the amount of the free radical that was left after it had time to exchange an electron with the designated antioxidant. Although all of the antioxidants I chose made a difference in the amount of free radical damage to the simulated brain cell, Lipoic acid was considerably better at neutralizing free radical Peroxynitrite than Glutathione and Vitamin D3.

**Awards Won:**