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**Vitamin E improves sperm functions after spinal cord injury.** Shulun Wang, Guichun Wang, Beverly E. Barton, Hosea F. S. Huang\*, Department of Surgery, New Jersey Medical School, Newark and DVA New Jersey Health Care System, East Orange, NJ

**Background:** Clinical studies suggested that reactive oxygen species (ROS) may contribute to abnormal sperm function after spinal cord injury (SCI). Current study examined the effects of vitamin E feeding on sperm functions in SCI rats.

**Research Design and Method:** The spinal cord of adult male rats was injured by cord-transection (SCX) or cord-contusion (SCC) at the level T9. These rats were given daily dose of vitamin E (2 or 10 mg/kg) beginning immediately or 8-10 weeks post injury for 8-10 weeks.

**Results:** Sperm motility was reduced in SCC and SCX rats, and was associated with elevated sperm cAMP contents ( $p < 0.01$ ) but reduced sperm protein phosphorylation. These changes were associated with lowered uptake of fluorescent dyes SYBR-14 and JC-1 ( $p < 0.05$ ,  $p < 0.01$ ), indicating that reduced sperm viability and mitochondrial function were the contributing factors for poor sperm motility after SCI. Vitamin E feeding during the acute phase of the injury improved sperm viability and mitochondrial potential ( $p < 0.05$ ,  $p < 0.01$ ), but failed to maintain sperm motility, in SCX and SCC rats. When administered during the chronic phase, vitamin E restored sperm viability, mitochondrial potential and motility in SCX rats ( $p < 0.05$ ,  $p < 0.01$ ); the effects in SCC rats were not apparent. Vitamin E feeding also improved sperm head condensation, and preserved the weights of male accessory glands ( $p < 0.01$ ) in SCC and SCX rats.

**Conclusion:** Vitamin E may improve sperm motility after SCI through its effects on sperm viability and mitochondrial functions, or through its effects on male accessory glands.

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