AN OVERVIEW OF THE POSSIBLE ROLE OF SELENIUM IN THE CHEMOPREVENTION OF CARCINOGENESIS FOR TNT-EXPOSED WORKERS

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Abstract: 2,4,6-Trinitrotoluene (TNT) is one of the most commonly used explosives for military and industrial applications and its exposure occurs occupationally during production. The presence of mutagenic compounds in the urine of workers exposed to TNT has been confirmed. TNT-exposed munitions workers in China reported a statistically significant increase in the rate of liver cancer. The association between producing TNT and associated disorders and chemoprevention or anti-carcinogenesis is insufficiently recognized in developing countries. Data from a sequential animal model of experimental hepatocarcinogenesis showed that sodium selenite is able to reduce the risk for cancer development in liver. Several selenoprotein genes may be involved with the selenium anticancer effect mechanism. Clinical studies involving more recently studies in humans strongly support the protective role of selenium against various types of cancer. The beneficial effects of selenium studies against carcinogenesis should be extended as a prophylaxis for TNT exposed workers with increased risk of cancer from increased exposure to TNT. Recently explored, selenium at nano size (Nano-Se) can serve as a potential chemopreventive agent with reduced risk of Se toxicity.