

Palm oil as a detoxicant of cadmium

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The use of cadmium for electroplating in most industries makes it one of the elements that come in regular contact with man. In metallurgy, it is used for brazing and soldering of alloys. During oil exploration, it is often disposed primarily along other wastes; its other sources are industrial and agricultural effluents, sewages and sludge. When introduced into the environment, it is often absorbed by plants and redistributed through the food chain. Several target organs of cadmium has been identified but it is said to be mainly bound to the methalothionein protein after initial metabolism in the liver and is eventually redistributed through the blood stream into the kidney, testes, lungs, heart, testes, the skeletal architecture and the nervous system were its toxic effects are mostly felt. In the course of these distributions, the cadmium compound induces several oxidative radicals which in turn shorts or slows down the proper functioning of the entire metabolic system.

Red palm oil is a rich source of vitamins, antioxidants and antitoxin properties. The tocotrienol value of palm oil is over 60 times richer than the antioxidant capacity of ordinary vitamin E. As potent antidote, it is utilized by the south-south people of Nigeria for resuscitating children who accidentally drink kerosene or eat soap. This helps to neutralize the negative effects of the kerosene and soap or in other cases, regurgitate it. Palm oil has been identified to have protective potency against cardiac ischemia and perfusion induced oxidative stress and modulation of serum lipid profile in rat models. The antioxidants in palm oil including carotenoids and tocols in silica gel extract of palm oil has the capacity of conferring protection against free radicals arising from ageing, atherosclerosis, cancer, arthritis, and Alzheimer's disease. Also supporting the antioxidative protective properties

of palm oil, Sutapa and Analava (2009) reported that palm oil consumption by humans reverses blockage of the carotid artery and platelet aggregation thus contributes to the prevention of stroke and Ischemic heart diseases. Sutapa and Analava, (2009) also reported that the tocotrienol fraction of palm oil is able to protect the human brain from oxidative stress and most forms of neuro-degeneration associated with aging. The mechanism by which these protections are conferred may be likened to their scavenging ability of free radicals and it being able to induce increased production of neurotransmitters like dopamine. The study of Achuba and Ogwumu, (2014) also revealed that Palm oil was able to confer protection from haematotoxicity in rats that were fed diesel contaminated diets.

With these proven evidences, and the knowledge of the high level of antioxidants in crude palm oil and palm oil extracts it has been considered as an effective natural product for the protection against cadmium poisoning hence this study investigated the role of palm oil and its extracts/fractions to confer protection against the induction of oxidative stress markers in acute cadmium induced toxicity.