

SELENIUM IN ANIMAL NUTRITION: METABOLIC PATHWAYS AND ANIMAL RESPONSES

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ABSTRACT

Livestock animals are not able to synthesize selenium (Se), a trace element, but it is a major component of many enzymes such as glutathione peroxidase, thioredoxin reductase and deiodinases. These enzymes are primary defenses of the body against reactive oxygen species and lipid hydroperoxides to ensure normal cellular function. Organic Se such as selenium-enriched yeast exhibits better absorption, greater retention and higher accumulation of Se in blood and tissues compared with inorganic Se such as selenite and selenate. Supplementation of Se to females during late pregnancy and lactation would be beneficial to maintain the Se metabolic requirement and reduce the oxidative stress experienced by the transition periods. The newborn are dependent on milk intake containing Se transferred from the mother to deal with the oxidative stress. The recent research shows that supplementation of Se in diets of livestock animals increase antioxidant activities, but this does not always relate to the increased animal productivity, reproductive performance and meat quality. However, to give livestock animals a chance to affectively cope with environmental challenges, there should be enough Se reserves available and an ability of building Se reserves in the body via dietary Se is important in farm animal nutrition.

Keywords: *Antioxidant, glutathione peroxidase, trace elements.*