

*Perspective*

## Selenium's nature and use in animal production

Takashi Yokoma\*

Department of Veterinary Medicine, Kyoto University, Kyoto, Japan.

Received: 13-May -2022, Manuscript No. AHPF-22-65160; Editor assigned: 16-May -2022, PreQC No: AHPF-22-65160 (PQ); Reviewed: 31-May -2022, QC No: AHPF-22-65160; Revised: 07-Jun-2022, Manuscript No: AHPF-22-65160 (R). Published: 14-Jun-2022

### ABOUT THE STUDY

Selenium (Se) is a trace element that is crucial in poultry and animal nutrition. It has been shown to have an important part in the body's antioxidant defence process. Selenium is a cofactor for the enzyme glutathione peroxidase, which catalyses the elimination of peroxides (free radical oxidation), making it vital in the prevention of oxidative stress. It also has a function in promoting reproductive health. Its absence in chickens causes exudative diathesis (hemorrhagic illness), nutritional muscular dystrophy, gizzard myopathy (turkeys), heart dystrophy (turkeys), and pancreatic degeneration, in addition to reproductive difficulties such as poor hatchability, fertility, sperm viability, and so on.

Nutrients from plants, soil, and even prey animals must be provided to meet the nutritional demands of food animals. Many potential nutrients are minerals found in chemical compounds that are not readily available. Although many minerals are poisonous to animals, nutritionists have established that a vast number of minerals, either as macronutrients or as micronutrients, are essential for proper growth and development of animals, including humans. Minerals such as calcium, phosphorus, salt, and potassium are included in macronutrients because they are involved in structural integrity and homeostatic systems in the body. Minerals such as magnesium, manganese, zinc, iron, and copper are examples of micronutrients, as are ultra-micronutrient minerals such as molybdenum, selenium, iodine, cobalt, chromium, and vanadium. Trace minerals, whether micronutrients or ultra-micronutrients, work as components of proteins, hormones, enzymes, or as cofactors that activate certain enzymes. Although popular foods such as corn, wheat, barley, soybeans, and oats are now cultivated all over the world,

they are not all the same. Some foods that contain selenium can be enhanced as a result of high selenium concentrations in the soil. Some foods, on the other hand, may contain very low amounts of selenium because the soil in which they are cultivated has very low quantities. Selenium has the distinction of being the most complex ultra-micronutrient to comprehend. It can exist in four valence states: -2 (hydrogen selenide, sodium selenide, dimethyl selenium, trimethyl selenium, and selenoamino acids such as selenomethionine), 0 (elemental selenium), +4 (selenium dioxide, selenous acid, and sodium selenite), and +6 (selenic acid and sodium selenate), and its valence state and water solubility Selenium in valence states -2, +4, and +6 can be poisonous, but at acceptable trace levels in feed or drinking water, selenium in valence states -2, +4, and +6 can also play various important functions in maintaining the body's homeostatic condition.

### Selenium used in animal production:

Selenium addition in chicken feed is now standard practise. Sodium selenite has been the standard source of dietary supplementary selenium for poultry and animals, when the US Food and Drug Administration authorised selenium as a feed supplement. Other inorganic selenium sources include sodium selenate and calcium selenate. All of the selenium in poultry comes from their diet. Selenium is nearly entirely present in regularly used feed items, such as cereal products and fish, poultry, and meat meals, as organic compounds such as naturally occurring selenoamino acids. Selenoamino acids are integrated into protein, mostly as selenomethionine and selenocysteine, and account for 50 to 80 per cent of total selenium in plants and cereals. Estimates of selenium bioavailability in poultry vary greatly depending on the parameters utilized for evaluation.

---

\*Corresponding author. Evangeline Stella, E-mail: [komashi23@yahoo.com](mailto:komashi23@yahoo.com).