Avian Flu – A Selenium Deficiency Disease

Will Nano Selenium Help Prevent Avian Pandemic?

The bird flu, or avian influenza, is spreading in Europe. The hype and hysteria in the media are quite unprecedented. We are treated to images of dead Swans being stuffed into plastic bags by Vets in protective clothing. The stage seems set for the inevitable disaster. But is the situation really that grave?

We are told that there is no remedy, except for Tamiflu and similar drugs, which have however been found to be ineffective. Vaccines for poultry exist and are widely used. A human vaccine however is impossible to make for now. The virus must mutate to infect humans directly before the process of making a vaccine can even begin, and then it will be several months before vaccines are ready for use.

Nutrition is important in forming the terrain and preventing illness

There are important nutrients, especially the mineral selenium, which determine the immune response of organisms to invading microbes and viral particles. Selenium has been identified as one of the factors in AIDS etiology by geo-epidemiologist Harold Foster. The mineral, or rather a lack of it, is also implicated in the appearance of avian influenza, says Qu Shaozhong in a comment posted to an earlier article on this site.

Selenium supplementation for fowl is recommended where the feed grains themselves do not contain a sufficient amount of this important mineral. A novel form of delivery - nano selenium - decreases the toxicity the mineral shows at high doses by a factor of .

The discussion of Qu Shaozhong, somewhat edited for better readability, is highly interesting as it shows a way of increasing resistance to the avian influenza virus in the affected bird populations as well as in humans by such simple means as the nutritional supplementation of selenium.

** Avian influenza's "internal factor" of Selenium deficiency and an epidemic prevention strategy of "treating the cause".

Qu Yuan Qu Lai Qu Shaozhong

The spread of avian influenza all over the world cannot be explained by external factors alone. According to dialectics, the *internal factor* is the basis and the *external* is the condition. The external factor can only act through the internal factor. What is the internal factor of avian influenza? **Study shows that the internal factor of avian influenza is the consumption of selenium —the only element that has direct relation with viruses in the body of birds - in the peak period (autumn, winter and spring) of egg laying, which causes body imbalance and susceptibility to virus attack.**

Let us examine the fact that the selenium composition in eggs is very high, with goose egg containing 336 mg/kg, duck egg 307 mg/kg, all reaching the *selenium rich* standard (280 mg/kg). The selenium composition of hen's egg is 223 mg/kg, approaching selenium rich standard, and exceeding by far the selenium content of flour (47 mg/kg), rice (70 mg/kg) and beef (43 mg/kg). It can be said that birds are providing high selenium nurture to humans. However, the sources of selenium nurture for birds are not so good.

Taking chicken as an example, a hen can lay eggs 15-18 kg, and the egg/forage ratio should be between 2.6 and 2.8:1. If the selenium composition of egg can reach 233mg/kg, the selenium composition of forage should be 83mk/kg. (not including that consumed by chickens in their life and activity). But in some countries and regions deficient in selenium, it is difficult to reach this level (because the selenium in the soil is provided to animals through plants, and if soil is lacking selenium, feed grains are of course lacking selenium).

When income falls short of expenditure, e.g. high production of egg and low intake of selenium, the bird organism will lose its balance. As selenium is an important element needed by immune system, extreme lack of selenium will increase the possibility of being infected with avian influenza. This can be analyzed from macroscopic and microscopic view.

1. As seen from macroscopic view, the spread of avian influenza over the world is related to selenium deficiency

Fact: over 40 countries and regions are lacking selenium, including Europe, the USA, Canada, Asia and Southeast Asia. China is seriously deficient in selenium.

On the selenium distribution map of China, one can see a large selenium deficiency band running from the Northeast to the Southwest composed of 45 parts of provinces and municipalities. In addition, other areas are also short of selenium. There is only one third of the territory of our country where the soil reaches the normal critical value of 0.1mg/kg published internationally in terms of selenium composition and the remaining two thirds are selenium deficient area. The area with serious lack of selenium, (≤0.02mg/kg) accounts for 29% .

Role of Selenium to reduce the pandemic and devastating effect of *virulent* Avian Influenza (Bird Flu) and other myxoviral infection like ND, IB & IBD through effective nutrition.

- Over 90% of infections in Poultry are transmitted through the mucosal surfaces of Digestive and or respiratory systems.
- Avian Influenza or Bird Flu is a myxoviral infection caused by an RNA virus.
- Myxoviruses are responsible for other viral infections such as Infectious Brusal Disease, Infectious Bronchitis and Newcastle Disease.
- Myxoviruses require *'myxo'* or mucin, a glycoprotein present in mucosal surface of Digestive & Respiratory systems.
- Like all living organisms, viruses also require selenium for reproductive functions.
- Viruses require *minute* quantities of selenium for proliferation.
- Selenium, although an essential component in life, can also be highly toxic.
- Normal selenium in the mucosal surface becomes toxic to the viruses and they die due to selenium toxicosis.

Therefore, preventing proliferation of Myxoviruses including Bird Flu virus can be achieved when normal selenium presence is maintained in the mucosal tissues.

TRUESEL NPs

Selenium, like Vitamin-E, has a central role in the immune system and serves as a major nutrient involved in the antioxidant system.

- Selenium is required nutrient and essential trace mineral for all domestic animals, including poultry. It is an essential component of tissues and enzymes involved in the cellular antioxidant protection.
- Vitamin-E & Selenium are key components of the antioxidant system, reducing lipid peroxidation. Se is an essential part of variety of selenoproteins, the best known of which is Glutathione peroxidase (GSH-Px). In particular, GSH-Px is involved in cellular antioxidant protection.
- Se has also been implicated as a factor affecting male fertility of poultry and increased hatchability and quality of fertile eggs.

TRUESEL NPs

Inorganic Selenium is usually fed as Sodium selenite or Sodium selenate. Organic Se has a couple of advantages compared to inorganic Se sources. First, the organic Se sources have a greater bio-availability and secondly, organic Se will not undergo pro-oxidation because it is already in the organic form (Mahan, 1995).

Organic form of Selenium predominantly found in plants is in the form of seleno-amino acids (McDowell,1992) i.e in the form of seleno-methionine (SeMet) and this is the storage form of the element in the body. In the animal SeMet, is converted to seleno-cystein (SeCys),a highly active form, rapidly utilised to produce the selenium proteins used in metabolism and immunity. So organic Se retention long-time in tissues. Nano-Selenium particles less than 100 nm have greater antioxidant activity than larger particles. Nano-Selenium particles of size 5-200 nm can directly scavenge free radicals in vitro depending on their size.

Pseudomonus putida strain of **TRUE SEL NPs** is safe non-pathogenic bacterium and **TRUE SEL NPs** provides higher bioavailability for Selenium deposition than organic Se-Yeast or inorganic selenium products and Generally Recognised As Safe (GRAS) and therefore most appropriate as feed supplement.

Benefits:

- A more bioavailable form of Selenium to increase body reserves & utilisation.
- Improves antioxidant status & immunity defence.
- Improves fertility, hatchability & reproductive performance.
- Improves Body weight gain, feed efficiency & egg quality.

** **TRUE SEL NPs** protect fatty acids from oxidizing. Essential fatty acids can easily oxidize and become rancid. Sperms are mainly composed of essential fatty acids.
** **TRUE SEL NPs** is also needed for production of testosterone.
** **TRUE SEL NPs** has protective and beneficial effects on semen quality.
** **TRUE SEL NPs** is recommended routinely to prevent Bird Flu, ND, IB & IBD @ 150 Gm/MT of complete feed.

Usage and Administration:
** To optimize egg production after infection incorporate 150 Gm/MT
** Suspected cases of infections add 50-150 Gm/MT of complete feed.