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Popular Article

A brief overview on toxicity effect of mercury in animals

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Poisonous Compounds

Mercuric oxide, mercuric chloride, mercuric iodide, mercuric cyanide, mercuric nitrate, mercurous chloride (calomel) and mercurous nitrate.

Organic Preparations

Merbromin (mercurochrome), thimersol (merthiolate), nitromersol (metaphen), phenyl mercuric acetate, phenyl mercuric nitrate, mercurial diuretics (neptal, tt1iomerin sodium and mercurophylline), phenyl mercuric chloride (PMC), phenyl mercuric acetate (PMA), ethyl mercuric chloride, iodide and phosphate and methyl mercuric hydroxide.

Occurrence

I. Mercurial poisoning is relatively infrequent.
II. Ingestion of seed grains treated with antifungal preparation containing mercury.
III. Licking of organic mercurial antiseptics, accidental mercury poisoning in a mare with red mercuric iodide blister.
IV. Inhalation of mercury vapor.
V. Accidental administration.
VI. observed mercury accumulation in tissues of pigs fed fish meat diet. Mercury concentration was highest in fresh tuna (0.153 mg/kg dry weight).

calories, 0.2 g of fat, 8.2 g of protein, 12.4 g of carbs, 298 g of calcium, 246 mg of phosphorus, 381 mg of potassium, and 2.9 mcg of vitamin D. Both varieties of milk contain choline, magnesium, vitamin A, riboflavin, vitamin B-6, vitamin B-12, folate, and a host of other nutrients.

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Pathogenesis

Inorganic mercuric compounds are irritant to skin and corrosive mucous membranes. They cause extensive damage to mucosa of GIT leading to severe gastroenteritis. The absorbed compounds cause damage to the capillaries of the organs from where they are excreted, viz., kidney, colon and buccal cavity leading to nephrosis, colitis and stomatitis. Organic mercurial cause degenerative changes in central and peripheral nervous system. Primary lesions are segmental demyelination. Mercury showed a time dependent demethylation of methyl mercury in dogs with uniform distribution of converted inorganic mercury (up to 93%) in central nervous system, whereas muscles contained only 30% of inorganic mercury. Mercury was deposited in all areas of cerebral hemispheres, the brain stem and the spinal cord including nerve cells, astrocytes, microglial cells and vessel walls. There are no effects on -reproduction, unborn offspring, and semen. However, placental transfer of methyl mercury to the foetus in minks. Extensive degenerative changes in the seminiferous epithelium of ducks fed methyl mercury chloride. The intensity of the cytotoxic changes in the different organs is proportional to the amount of mercury accumulated.

Symptoms

ACUTE FORM

I. Very sudden onset.
II. Severe bloody diarrhea.
III. Nausea and vomiting.
IV. Anorexia, salivation, coughing and a foetid breath.
V. Depression and muscular weakness.
VI. Increased pulse and respiration rate.
VII. Subnormal body temperature.
VIII. Polyuria followed by anuria.
IX. An ash grey color of oral mucosa.
X. Death within a few hours from shock and dehydration.

CHRONIC FORM

I. Slow onset.

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II. Diarrhea, anorexia and salivation.
III. Loss of body weight, weakness and anemia.
IV. Muscular tremors, incoordination and head pressing.
V. Blindness and posterior paralysis.
VI. Slight rise in body temperature.
VII. Weak, rapid pulse and respiration.
VIII. Loosening of teeth and soreness of the gums.
IX. Itching, loss of hair, formation of scabs around the anus, vulva and on the udder. Sometimes eczematous lesions on the skin.
X. Tonic spasms in advanced stage.

Post-mortem Appearance

I. Cooked appearance of the mucosa of mouth, tongue, pharynx and esophagus.
II. Hemorrhagic gastro-enteritis and ulceration of the stomach.
III. Perforation of the caecum and colon.
IV. Swollen liver and kidneys.
V. Catarrhal nephritis.
VI. Congestion and oedema of the lungs.
VII. Dark red blood which coagulates slowly.
VIII. Hydrothorax and hydropericardium.
IX. Formation of diphtheritic membrane in the large intestine.
X. Hemorrhages in epicardium and endocard1um.

Chemical Tests

1) **Reinsch test:** The procedure is the same as for arsenic. A bright silvery coating forms on the copper foil. On heating, mercury will volatilize and deposit as round globules of metal on the cooler part of the tube.
2) **Stannous chloride test:** Stannous chloride solution gives with mercuric salts a white precipitate of mercurous chloride. On adding more solution and heating, a grey precipitate of metallic mercury is formed.
3) **Potassium iodide** produces a yellow, then red, precipitate of mercuric iodide, soluble in

excess of the reagent.

4) **Diphenyl carbazone** gives a violet-blue color with mercuric salts in neutral or faintly alkaline solution.

Treatment

1) Remove the poison from the digestive tract. A gastric lavage with 5 per cent sodium formaldehyde sulphoxalate.
2) Milk or white of egg should be given,
3) Sodium thiosulphate, 20 per cent solution, @ 25 ml/100 kg body weight.
4) BAL (Dimercaprol), 5-8 mg/kg body weight, I.M.
5) Normal saline solution, 1.V. to check dehydration.

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