PRODUCT MONOGRAPH

MICRO Cr

Chromic Chloride Injection USP

(CR^{2+} 4µg/mL and 20µ/mL)

Trace Element

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CLINICAL PHARMACOLOGY

Trivalent chromium, an essential element, is a component of glucose tolerance factor which facilitates the reaction of insulin with receptor sites of insulin-sensitive tissues. Chromium helps to maintain normal glucose metabolism and peripheral nerve function.

The distribution of chromium occurs throughout the body in low concentrations without special concentration in any one tissue. Plasma chromium is bound to siderophilin (transferrin), a B_1 globulin. Serum levels of 1 to 31 ng chromium per mL have been reported. Tissue uptake is rapid with plasma clearance occuring in several days. Since there does not appear to be an equilibrium between plasma and tissue chromium, blood levels are not considered to accurately indicate body chromium status. Administration of chromium supplements to chromium-deficient patients can result in normalization of the glucose tolerance curve from the diabetic-like curve typical of chromium deficiency. This response is viewed as a more meaningful indicator of chromium levels.

Chromium is excreted mainly in the urine (5-10 μg/day) with small amounts lost in the

feces via the bile and small intestine. In subjects not receiving total parenteral nutrition (TPN), urinary chromium has been reported to be less than 5 μg/day, whereas, patients receiving TPN excreted much higher levels ranging from 10 to more than 100 μg chromium/day. A chromium balance in TPN patients can be assessed by the measurement of chromium input and output.

When chromium was administered intravenously to diabetics, increased chromium urinary levels were observed as compared to normal persons.

Chromium supplementation during TPN helps prevent deficiency symptoms which include impaired glucose tolerance, ataxia, peripheral neuropathy and a confusional state similar to mild/moderate hepatic encephalopathy.

INDICATIONS

Micro Cr (Chromic Chloride Injection USP) is indicated for use as a supplement to intravenous solutions given for TPN. Its administration in TPN solutions helps to maintain plasma chromium levels and to prevent depletion of endogenous stores of chromium and subsequent deficiency symptoms.

WARNINGS

Micro Cr is a hypotonic solution which should be administered in admixtures only.

If toxicity symptoms occur due to chromium, discontinue supplementation of TPN solutions

immediately.

Do not give undiluted **Micro Cr** by direct injection into a peripheral vein because of the potential of infusion phlebitis.

PRECAUTIONS

In diabetic patients, the contribution of chromium supplementation for maintenance of normal glucose homeostasis has to be taken into account. In all diabetic patients, the hyperglycemia should also be controlled with appropriate therapy.

ADVERSE REACTIONS

No adverse reactions have been reported for the amount of chromium present in this product. The amount is small and toxicity symptoms are not likely to occur at the suggested dosage level.

SYMPTOMS AND TREATMENT OF OVERDOSAGE

Trivalent chromium is a relatively non-toxic element. Trivalent chromium has been administered to TPN patients exhibiting chromium deficiency at dosage levels up to 250 μg/day for two weeks with no signs of chromium toxicity.

Symptoms of chromium toxicity that have been reported for other compounds include nausea, vomiting, anemia, gastroenteritis and renal and hepatic damage.

DOSAGE AND ADMINISTRATION

DOSAGE

The suggested dosage ranges are :

Adults:

For the metabolically stable adult receiving TPN, 10 to 15 μg of chromium per day is suggested as the additive dosage level.

The metabolically stable adult with intestinal fluid loss may require 20 μg of chromium daily with frequent monitoring of blood levels as a guideline for subsequent administration.

Pediatrics:

For pediatric patients, 0.14 to 0.20 μg chromium/kg/day is suggested as the additive dosage level.

ADMINISTRATION

Periodic monitoring of chromium plasma levels is suggested as a guideline for administration.

Serum levels of 1 to 31 ng/mL have been reported in healthy subjects.

PHARMACEUTICAL INFORMATION

DRUG SUBSTANCE

Proper Name: Chromic chloride

Chemical Name: Chromium chloride ($CrCl_3$) hexahydrate.

Molecular Formula: $Cr\ Cl_3 \cdot 6H_20$.

Molecular Weight: 266.5

Description: Chromic chloride is a dark green, odourless, slightly deliquescent crystal. It is soluble in water and in alcohol, slightly soluble in acetone, and practically insoluble in ether.

COMPOSITION

Micro Cr contains chromium chloride ($CrCl_3$) hexahydrate in water for injection, with hydrochloric acid for pH adjustment.

STABILITY AND STORAGE RECOMMENDATIONS

Store at controlled room temperature not exceeding 28°C. Do not permit to freeze.

DILUTION FOR INTRAVENOUS USE

Aseptic addition of **Micro Cr** to the amino acid/dextrose component of a TPN solution under a laminar flow hood is recommended. After dilution, the solution must be used within 24 hours.

Visually inspect parenteral drug products for particulate matter and discolouration prior to administration whenever container and solution permit.

AVAILABILITY

Micro Cr is available in 10 mL single dose clear glass vials packaged in boxes of 10, in two strengths, 4 μg/mL (40 μg chromium/10 mL), and the concentrated form of 20 μg/mL (200 μg chromium/ 10 mL).

Micro Cr is for intravenous use after dilution only.

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