



## CUE<sup>®</sup> injection

FOR THE TREATMENT AND PREVENTION OF COPPER DEFICIENCY IN CATTLE, SHEEP AND DEER.

**PRESENTATION:** Sterile solution.

**ACTIVE CONSTITUENTS:** Each mL contains: Copper (as Calcium Copper Edetate) 50 mg

**PROPERTIES:** CUE<sup>®</sup> injection is an injectable suspension of calcium copper edetate. Copper edetate is absorbed from the injection site and redistributed to the liver for storage. The copper stored in the liver acts as a depot from which copper can be slowly released to maintain normal concentrations of copper in the blood during periods when the copper intake may be inadequate.

Copper is a vital component of many enzyme systems, and is directly involved in red blood cell formation, connective tissue metabolism, myelin formation in newborn animals, skin pigmentation, and bone marrow formation.

**Testing for Copper Deficiency:**

Monitoring the herd using either liver biopsies or samples from cull cow livers<sup>2</sup> is recommended to complement blood, pasture and soil analysis.

- The liver is the body's storeroom for copper, containing up to 70% of the total body copper<sup>1</sup>. Copper levels in the blood will only decrease when liver stores are exhausted.
- Liver copper levels less than 100 µmol/kg fresh weight indicates depletion. In cattle 95 µmol/kg liver copper is considered marginal, and less than 45 µmol/kg is deficient.
- Aim is to keep concentrations above 95 µmol in Spring by attaining high liver copper in late Autumn. The recommended liver copper "threshold" level for cows at drying off is at least 400 – 500 µmol/kg<sup>2</sup>.

**Copper Supplementation:**

- Supplementing copper to dairy cattle during the period of zinc supplementation for facial eczema is no longer recommended as it appears free copper ions in the liver may make cows more susceptible to the effects of facial eczema sporidesmin<sup>3</sup>.
- Consequently, injecting copper at drying off, offers a practical means of achieving the target threshold.

**DOSAGE AND ADMINISTRATION:**

Excessive copper is toxic: do not use where copper deficiency has not been diagnosed. Shake thoroughly before use to ensure a uniform suspension. Use contents within 60 days of first broaching the pack. Discard unused portion. Administer by subcutaneous injection ONLY. Injection to be given in the anterior half of the neck. Drain all unused product from tube and gun if the product assembly is to be left standing, even for short periods.

**Young Cattle:** Over 4 months of age: 2 mL

**Adult Cattle:** 2 – 4 mL

**Adult Sheep:** 1 mL

**Deer:** 1 mL/50kg bodyweight

**Do not use in cattle under 4 months of age, as these animals are more prone to acute copper toxicity.**

Dosage may be increased up to 4 mL for adult cattle only under the advice of a veterinarian and when severe copper deficiency has been confirmed by analysis of liver copper levels, or when overt clinical signs of deficiency are observed.

Dosage may be repeated every 3 months in cattle, and every 4 months in sheep and deer. The optimal treatment program should be established by monitoring the animals' copper status. In cases of severe deficiency your veterinarian may recommend more frequent dosing.

**WITHHOLDING PERIOD:** Nil.

**POISONS SCHEDULE:** Nil

**REGULATORY STATUS:** Restricted Veterinary Medicine, available only under veterinary authorisation. Registered pursuant to the ACVM Act 1997, No. A007711.

**IN-USE BROACHING:** Use contents within 60 days of first broaching the pack. Discard unused portion.

**PACK SIZE:** 250 mL.

**References:** 1. N Grace (1994) *The Mineral Requirements of Grazing Ruminants*, NZSAP.

2. Target level cited by ND Grace et al (2010) *High and variable copper status identified among dairy herds in the Waikato region by concentrations of Cu in liver sourced from biopsies and cull cows*, New Zealand Veterinary Journal 58 (3), 130 – 136.

3. R Laven & R Ellison (2011) *Trace elements and micronutrients for dairy cattle: Update*, Proceedings of the Society of Dairy Cattle Veterinarians of the NZVA.

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