



## CUE® injection

FOR THE TREATMENT AND PREVENTION OF COPPER DEFICIENCY IN CATTLE.

**PRESENTATION:** Sterile solution.

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

**PROPERTIES:** CUE® 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 well before use. Use within 28 days of first broaching the pack. Administer by subcutaneous injection ONLY. Injection to be given in the anterior (top) half of the neck.**

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

**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 only 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 after 4 months. Repeat dosage should be based on current information regarding herd copper status.

Where severe copper deficiency has been established dosage may be repeated more frequently until clinical signs abate or liver copper levels are deemed adequate.

**WITHHOLDING PERIOD:** Nil.

**CONTRAINDICATIONS:** Not to be used concurrently with any other form of copper supplementation, or administered at the same time as any other treatment eg. drenching, vaccination. Do not administer to animals that are suffering from liver disease or fascioliasis, or have been grazing on plants that may cause liver disease.

**POISONS SCHEDULE:** Nil

**REGULATORY STATUS:** AUSTRALIAN PESTICIDES & VETERINARY MEDICINES AUTHORITY

**IN-USE BROACHING:** Use within 28 days of first broaching the pack.

**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.

Australia-Wide Toll Free: 1800 801 201

Email: [info@iahp.com.au](mailto:info@iahp.com.au)

Website: [www.iahp.com.au](http://www.iahp.com.au)

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