

Guidelines on the use of No Possums Cholecalciferol Gel long life Baits

Control of Possums

NO Possums Cholecalciferol Gel Bait is a thermoplastic gel matrix containing attractants, flavours, cholecalciferol (vitamin D3) toxin and Bitrex®. The gel is tolerant of a wide range of weather conditions and will resist degradation for 2 years and more.

Cholecalciferol is a vertebrate toxin originally developed for the control of rodents. It was found to be even more effective against possums but of low toxicity to birds, insects and aquatic species.

NO Possums contains a bittering agent called Bitrex® to make it less palatable to non-target animals, but like other toxins used against possums and rodents, cholecalciferol is toxic to pets and stock and must be kept out of their reach. However, cholecalciferol poses a lower risk to dogs, cats and other predators or scavengers that would eat a possum or rodent that has taken cholecalciferol bait.

A lethal dose of NO Possums Cholecalciferol Gel Bait for possums is approximately 15g of the toxic gel. The average amount of gel taken by a possum is 30g. A lethal dose for a rat is as little as 2g. Possums or rodents are unlikely to keep feeding on the bait because one of the first symptoms of the toxin is suppression of appetite, usually within 12-36 hours.



Placement of Stations

In areas where there is no risk of dogs, stock, weka or other non-target species feeding on the gel, the stations should be fixed vertically on a tree, post or other suitable surface at about 30cm from the ground. Do not incline the station forward, but a small (less than 5°) inclination backward is OK. In this position a possum can stand comfortably and feed at the station. Fig 1.

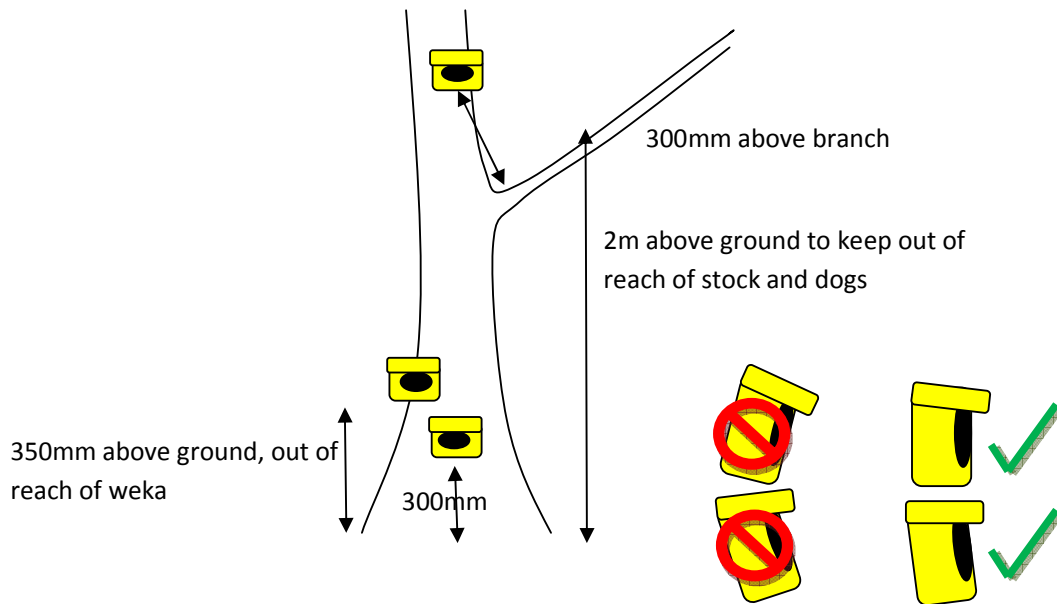


If dogs, stock, weka or other non-target species are likely to enter the area, the stations should be placed higher, out of their reach. However, if possible the station should be placed 30cm above a branch or other platform so that the possums can still stand comfortably and feed at the station.

A flour blaze* or other visual lure can be added to the tree to attract possums to the position of the station. Fig 2.



Note: The warning signs supplied must be displayed in areas where the public have access.



*A flour blaze is made by dusting the tree or post below the station with a mix of $\frac{3}{4}$ flour, $\frac{1}{4}$ icing sugar and a spoonful of cinnamon or curry powder.

Fixing of Stations

The stations are normally supplied with two lengths of screw for fixing to trees or posts. The longer screws should be used on rough and thickly barked trees to give good purchase. If the stations are to be fixed to plantation trees, Kiwicare can supply plastic fixers that will not pose a hazard to felling and sawmill operations. Please inform Kiwicare of this requirement when ordering.

Ensure the station is set as close to vertical as possible and try not to block the drain holes at the rear. Do not tighten the screws too much as this may warp the back plate and not allow good closure of the station clasp.

Pre-feeding

With all toxic baits there is a danger that a target animal will take less than a lethal dose. In this case they may become sick but survive. They may remember the food that made them sick and avoid it in the future. This is known as bait shyness. One way to reduce the chances of bait shyness is to reduce the likelihood of an animal eating a sub-lethal dose. Pre-feeding with the same bait, but one which does not contain the toxin, gets the possums/rodents accustomed to where the food is and used to the bait. Then, when the pre-feed bait is replaced by the bait containing the toxin the possums or rodents will feed more readily on the bait and will be much less likely to take a sub-lethal dose.

Possums should be pre-fed with NO Possums Non-toxic Pre-feed Gel Bait for two weeks or until there is a good take of the pre-feed gel. Do not move the position of bait stations between pre-feeding and use of the toxic gel.

Kiwicare recommends pre-feeding in all situations where there are possums in the areas where treatment is to be carried out. Pre-feeding may be omitted if the operation is to control possums entering the area or where there are very few possums.

Knockdown of Moderate or High Numbers of Possums

Prior to carrying out control work it is useful to establish the number or level of possums in the area. For large areas the accepted methods of measuring possum numbers are Residual Trap Catch (RTC) and Wax Tag Monitoring (WTM). Information on these methods can be found on the National Possum Control Agencies website at www.npca.org.nz on the Specialist Information section.

If these methods cannot or will not be employed but it is known that possums are in the area, the amount of pre-feed that is taken can give an indication of the level of possum activity.

How many bait stations should be employed? And what size of bait should be used?

Kiwicare recommends using one station per hectare (100m x 100m grid) of area under control. This is based on the average range of a possum being one hectare and so it would be expected that all possums will encounter a station**. If fewer stations than one in every hectare are used not all possums will encounter a station and will not be controlled. However, the density of stations can be adjusted up or down depending on the numbers of possums estimated in the area, the nature of the environment and the required outcome of the operation, there is evidence that one station per two hectares (100m x 200m grid) is sufficient in some habitats.

***'Average' home ranges are only meaningful if applied to similar environments - and are also complicated by varying interpretations of the term. Trends are seen, however, in that possums living in densely forested areas have smaller ranges than those from more open environments (pasture-forest margins) and males have larger ranges than females.

Green (1984) cites average home ranges for New Zealand possums as being 1.9 ha for males, and 1.3 ha for females, with range lengths of 295 m and 243 m respectively.

Boundary and Buffer Operations

NO Possums Chole is frequently used to protect boundaries and act as a buffer between areas where possums are prevalent and where possums should be kept out. As possums often carry bovine tuberculosis the protection of pasture from possums in adjoining bush is vital to prevent the spread of the disease to cattle and deer. In this situation we advise stations are set at between 25 and 100m intervals along the boundary to intercept possums moving onto pasture. The frequency will depend on the estimate of the possum numbers in the bush edges.

NO Possums Chole is also well suited to protecting areas of bush that have low possum numbers from possums that would move into the area. A line or lines of No Possums stations and gel around the perimeter of the areas will intercept the possums that would migrate into the area and stop or slow the increase in possum population. Again the frequency of stations along the buffer will depend on the number of possums but a station every 25-100m would be recommended.

Maintaining Low Possum Numbers

Where possums numbers are already low (RTC Index below 5%) NO Possums gel bait can be used effectively to keep the numbers from rising. Because the bait remains palatable and toxic for two years the bait is likely to be effective when a possum encounters it.

In this case pre-feeding may be unnecessary as possums may encounter baits infrequently. And the frequency of stations may be less than one per hectare because it can be assumed that the ranges of possums (particularly males) will be larger as they have to travel farther to find mates.

Post Operation Monitoring

Kiwicare recommends that any post operation monitoring should not be carried out before a minimum of three weeks with the toxic bait in place.

Toxicology

Please treat all poisons with care.

- **Active ingredient – 0.8% (8g/kg) cholecalciferol (Vitamin D3)**
- **Ready to use gel**
- **Green in colour**
- **Sweet orange odour**

Mode of Action

Cholecalciferol causes calcium stores to be mobilised from the bones to the plasma, resulting in hypercalcemia and heart failure.

Cholecalciferol may cause hypercalcemia by increasing intestinal absorption of calcium, by increasing calcium and phosphorous resorption by the kidneys and by osteoclastic osteolysis increasing bone release of calcium.

Depending on the dose hypercalcemia may develop with 24 hours.

Risks to Non-target Animals

As with all poison baits there is a risk of accidental ingestion by non-target animals. It is important to keep children, pets and stock away from baits.

As possums do not prolong their feeding on cholecalciferol baits and the cholecalciferol is largely metabolised before death, there is less chance of animals that eat possum carcasses being poisoned.

Symptoms of Hypercalcemia

Anorexia, lassitude, nausea, vomiting, diarrhoea, polyuria, profuse sweating, headache and extreme thirst.

The calcium and phosphorous concentrations of serum and urine are increased and calcium may be deposited in soft tissues including arteries, heart muscle and kidneys causing hypertension and cardiac and renal failure. Normal serum calcium levels range from 8.5 – 11.8mg/dL (2.2 – 3.0mmol/L) for dogs and 7.9 – 10.9mg/dL (1.6 – 2.6mmol/L) for cats.

Hypercalcemia can cause nephropathy indicated by high blood urea, nitrogen (BUN) or creatine levels.

Advice to Veterinarians

Laboratory Diagnosis

May include hypercalcemia, hyperphosphatemia, acidosis and azotemia.

Treatment

1. Emetics

If the patient has consumed cholecalciferol bait within the last 3 hours induce vomiting.

If the stomach cannot be cleared with vomiting or the animal has already digested the bait, begin further treatment immediately.

Begin monitoring serum calcium levels 24 hours after bait ingestion (in order to give cholecalciferol time to be metabolised). Serum calcium levels should have elevated within 24-48 hours after ingestion.

2. Fluid and electrolytes

Administer large quantities of fluid and electrolytes (exclude calcium) by mouth or IV (saline solution) with an appropriate diuretic (that does not cause calcium retention e.g. Frusemide). Place patient on low calcium diet.

Avoid exposing patient to sunlight.

Frusemide (1mg per Kg/#TID) inhibits calcium resorption by the kidneys. Caution: the patient should be rehydrated before frusemide is administered or dehydration may worsen.

3. Prednisone (0.5 – 1.0mg per Kg/#BID) decreases gut absorption, promotes calcium excretion by kidneys and may inhibit release of calcium from bones.

4. Phosphate binders (Amphojel) may decrease CaxP product if hyperphosphotemia is concurrent.

5. Calcitonin as recommended by the manufacturer inhibits osteoclastic bone resorption and has direct calciuric effect in the short term.

6. Other treatments could include sodium bicarbonate as alkalosis decreases ionised and total calcium, but should be closely monitored.

Sodium EDTA – complexed ionised calcium. Use only if extreme hypercalcemia is present as it may cause acute renal failure.

7. Continue with diuretics and cortisone treatment until all cholecalciferol has cleared.