A single shot vaccine for the prevention of botulism caused by Clostridium botulinum types C and D. In endemic areas a single dose is sufficient to protect animals for three years after they are vaccinated for the first time.

**WHAT IS SINGVAC® 3 YEAR VACCINE?**

- The world’s best botulism vaccine
- An oil based double emulsion vaccine for active immunisation against botulism in cattle
- Only one initial injection required for 3 years protection
- Immunity develops within 35 days of treatment in previously unvaccinated animals
- Generates protective levels of circulating antibodies for at least 36 months
- Minimises the effects of missed mustering

**WHY CHOOSE SINGVAC 3 YEAR VACCINE?**

1. **Prevent botulism types C & D**
   Botulism is a severe and fatal disease of cattle. It is caused by a toxin produced by the bacterium Cl. botulinum. Uncontrolled it may cause significant annual losses, and in outbreaks losses may be 25% or more of the herd. Vaccination is the only practical way to prevent botulism. The disease is especially common in phosphorous and protein deficient areas across northern Australia, but outbreaks can also occur in grazing cattle in southern Australia, as well as in dairies and feedlots.

2. **Single dose**
   Traditional botulism vaccines containing aluminium salt adjuvants require two doses administered several weeks apart to stimulate a protective immune response. SingVac 3 Year Vaccine is formulated in a water-in-oil-in-water emulsion that enables a protective immune response against Cl. botulinum types C & D with just a single dose.

3. **Rapid onset of immunity**
   In previously unvaccinated animals, SingVac 3 Year Vaccine will generate protective levels of circulating antibodies against Cl. botulinum types C & D within 35 days of vaccination.

4. **Only treat every three years**
   Treating bulls and breeding cows less frequently means significant savings in vaccine purchases and labour and reduces stress on cattle due to reduced handling.

5. **High blood levels**
   Vaccination with SingVac 3 Year Vaccine results in much higher antibody levels than occur with conventional vaccines after just a single dose.

6. **Minimise the effects of missed mustering**
   Regardless of what vaccine you use, missed mustering increases the risk of losses due to botulism. However, over a three year period, SingVac 3 Year Vaccine keeps more cattle fully protected against botulism than annual vaccination programs. For example, in a closed cattle herd with a 20% missed muster rate each year, SingVac 3 Year vaccine will fully protect 80% of the herd for the entire three year period. In comparison, when using an annual vaccination program, only 51% of the herd are protected for the entire three year period.

**WHEN TO USE SINGVAC 3 YEAR VACCINE**

1. **Conditions that favour development of botulism**
   Botulism occurs worldwide and in all cattle producing regions of Australia, but it is more common in the phosphorous deficient parts of northern Queensland, Western Australia and in the Northern Territory. It is usually associated with cattle eating carcasses, bones and carrion to satisfy a craving for phosphorus and/or protein. Botulism can also occur in intensively fed beef and dairy cattle due to the presence of dead vermin in supplies of animal feedstuffs, grains or hay. Improperly made silage that rots instead of fermenting is an ideal environment for botulism bacteria to grow. Water may also be a source of botulism toxin if animals die and decompose in it. Animals in endemic areas, or those exposed to these circumstances should be vaccinated.

2. **Classes of livestock**
   All cattle potentially exposed to botulism should be vaccinated. SingVac 3 Year Vaccine does not require an annual booster treatment, and will provide immunity for at least 36 months, so it is ideal for bulls, breeding cows and other animals that you expect to keep for more than one year.

3. **Timing**
   In the endemic areas of northern Australia, treat when cattle are mustered or before cattle may be exposed to botulism.
### HOW TO USE SINGVAC 3 YEAR VACCINE

1. **Best practice vaccination procedures**
   - This product should be injected only under the skin (not into the muscle)
   - Inject high on the neck behind the ear
   - Maintain cleanliness at all times
   - Avoid injection of animals during wet weather or under dusty conditions
   - Use shortest needle possible, not exceeding 1.5 mm x 16-18 gauge
   - Keep needles sharp and clean, replace frequently
   - See product leaflet for specific vaccination procedures

2. **Site Reactions**
   Site reactions usually indicate that the animal is mounting an immune response. Some animals may show small – medium sized site reactions a few weeks after vaccination which will gradually subside. Larger site reactions may be seen in a very low percentage of animals. Large, persistent site reactions are usually due to inaccurate vaccination technique.

3. **Vaccination program**
   Adopting SingVac 3 Year vaccination program is simple. The most commonly used program is to vaccinate the whole herd with SingVac 3 Year Vaccine in the first year and then in the second year, vaccinate weaners and newly purchased cattle with SingVac 3 Year Vaccine. In the third year, vaccinate newly purchased and weaner cattle with SingVac 1 Year in order to synchronise the herd. In extensive pastoral operations where two rounds of mustering are conducted, “bang-tailing” cattle during the first round will allow you to identify cattle that need to be treated in the second round. NLIS tags can also help identify animals that were not mustered in the first round.
   In endemic areas a second dose is not necessary until boosting is required 3 years later. Annual vaccination is recommended in non endemic areas where infection is rare.

### COMPOSITION
SingVac 3 Year Vaccine is an oil-based double emulsion vaccine containing toxoids of:
- *Clostridium botulinum* type C
- *Clostridium botulinum* type D

### DOSAGE
Cattle: 2 mL. Inject subcutaneously.

### DOSES PER PACK

<table>
<thead>
<tr>
<th>Animal</th>
<th>Doses/200 mL</th>
<th>Doses/500 mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>100</td>
<td>250</td>
</tr>
</tbody>
</table>

### WITHHOLDING PERIODS / ESI
- **Meat**: Nil
- **Milk**: Nil
- **ESI**: Not required

### PRESENTATION
Liquid: 200 mL, 500 mL

### STORAGE
Store between 2°C and 8°C (Refrigerate. DO NOT FREEZE). Protect from light. Once opened, vaccine should be used within 24 hours.

### RESEALING INSTRUCTIONS
A partially used pack can be kept for the next day if the following steps are taken:
1. Unscrew/remove the delivery tube from the vaccine pack.
2. Empty the delivery tube and vaccinator by depressing the plunger several times.
3. Disinfect the stopper.
4. Store unused portion in the refrigerator between 2°C and 8°C. Do not freeze.

### APVMA NUMBER
- 58461

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2. Data on file: 830-B-AU-01-01
3. Meat & Livestock Australia Final Report, Northern beef situation analysis, Project Code: B.89F95, 18 August 2010
4. Model Assumptions: The model follows a particular group of cattle in an endemic area over a three-year period, and assumes that there is no replacement cattle brought into the herd. It assumes that cattle that are vaccinated are protected against botulism for the duration of the claim on the vaccine label. It compares the botulism losses due to missed mustering between two identical herds with a fixed mustering rate and a fixed botulism challenge rate, with the only difference being the vaccination program used: an annual vaccination program with a traditional vaccine that gives 12 months’ protection vs. a three-yearly program using SingVac 3 Year Vaccine that gives three years’ protection from a single dose.