Current Rift Valley Fever Vaccines Available

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OIE RVF SEMINAR (S.A.-Bloemfontein)
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Onderstepoort area

- **Veterinary Faculty:**
  - Veterinary Training

- **ARC-Onderstepoort Veterinary Institute**
  - Services: Diagnostics, production (FMD)
  - Research

- **OBP:**
  - Vaccines & other biologicals production
Rift Valley Fever Vaccine

- Current commercial vaccines
- Production methods
- Advantage & Disadvantage
- Challenges
- Recommendations
## RVF Vaccines currently available

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Strain</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactivated (OBP/VSVRI)</td>
<td>Pathogenic field strain</td>
<td>S.A</td>
</tr>
<tr>
<td>LIVE attenuated (OBP &amp; KEVEVAPI)</td>
<td>Smithburn</td>
<td>S.A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kenya</td>
</tr>
</tbody>
</table>
History of vaccine strain

- Pathogenic Strain
  - 6/mice
  - 2/cells

Upstream process

- BHK cells
- Infection (seeding)
- Determine titre

Downstream process

- Inactivation process
- In process testing
- Formulation
- Bottling
- QC
<table>
<thead>
<tr>
<th>ADVANTAGE OF INACT. RVF</th>
<th>DISADVANTAGE INACT RVF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe in pregnant animals</td>
<td>Short duration of immunity</td>
</tr>
<tr>
<td>Can be used in outbreaks situations</td>
<td>Need more than one inoculation</td>
</tr>
<tr>
<td></td>
<td>Safety on handling the production seed material (human)</td>
</tr>
<tr>
<td></td>
<td>Poor colostral immunity</td>
</tr>
<tr>
<td></td>
<td>Need more antigen &amp; longer production lead time</td>
</tr>
</tbody>
</table>
RVF-LIVE

History of strain

- Smithburn Isolated (1930-1944)
- Mouse brain/eggs/Mouse-cells

Upstream process

- BHK CELLS
  - Infection (Seeding)
  - Titre determination

Formulation

- STABILIZER
- BOTTLING
- FREEZE DRYING
- QC TESTING

BIO ONDERSTEPOORT PROD
<table>
<thead>
<tr>
<th>ADVANTAGE OF RVF LIVE</th>
<th>DISADVANTAGE RVF LIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Highly efficacious</td>
<td>• Teratogenic for foetus/Abortions</td>
</tr>
<tr>
<td>• Need only single inoculation</td>
<td>• Not advisable to use during Outbreaks</td>
</tr>
<tr>
<td>• Ease of production &amp; cost effective</td>
<td>• It cannot be used during high production cycle</td>
</tr>
<tr>
<td>• Shorter production lead times</td>
<td>• Potential risk reverse to virulence</td>
</tr>
<tr>
<td>• Able to produce large quantities</td>
<td></td>
</tr>
</tbody>
</table>
VOLUME PER PRODUCT

1 unit=50 doses

1 unit-100 doses

Drop Series Fields Here

Total

Product ▼ Year ▼

BIO ONDERSTEOORT PROD
Quantities per region (2005-2009 January)

Doses - d

**Middle East**
- 4 'm d (live)

**N. East Africa**
- Djibouti
- Somalia
- Sudan
- 8'm doses (live)
- 340000 d (inac)

**East Africa**
- Kenya
- Tanzania
- Uganda
- 2,7'm d (live)

**SADC**
- 3,1 'm inact
- < 1 m doses (live)

**Notes:**
- 8'm doses (live) and 340000 d (inac) are mentioned for the Middle East region.
- 2,7'm d (live) for East Africa includes Kenya, Tanzania, and Uganda.
- The SADC region has 3,1 'm inact and < 1 m doses (live) mentioned.

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Challenges

• Concerns on using live vaccines during outbreaks.
• We need a product that will be safe to use during production cycle.
• Supply products during period of need
• Product that is safe to handle, ease of application and cost effective for farmers.
• Able to produce in large quantities at shortest lead time.
Recommendations on the current problems

• We need a common regional approach on vaccination strategy.

• Common understanding on which vaccine between live (High risk areas) or inactivated (low risk areas) will be feasible for the current problem.
Thank you...