JAUNDICE IN SHEEP IN SOUTH AFRICA – CONFUSION AND RESOLUTION

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February 2020
**EARLY EFFORTS**

- Veterinarians trained in Europe - 19th Century
- Unknown Diseases
- Farmer observations and opinions
- Researchers only appeared from 1874
- One of the conundrums was jaundice in sheep that led to high mortality

**Late 1800s**
Duncan Hutcheon – the Father of Veterinary Science in South Africa

1880
THEILER AND TRIBULOSIS

- Methodical approach
- Tested many options
- Careful observations
- Full description
- Reproduced the disease
- Geeldikkop or Tribulosis

1918
Tribulus terrestris
Geeldikkop
Theiler, Henrici and Green
DE KOCK AND ENZOOTIC ICTERUS

• Same area as Geeldikkop (arid Karoo)
• Sheep sent by train to Onderstepoort
• Died soon after arrival
• Severe jaundice
• No photosensitisation
• Cause unknown

1928
Gilles de Kock
Enzootic Icterus
JOHN QUIN AND PATHOPHYSIOLOGY

• Why and how are jaundice and photosensitivity linked?
• Why only in ruminants?
• Photodynamic agents
• Ligation of the bile duct induced photosensitisation
• Identified phylloerythrin
• Origin was chlorophyll

1930s
John Quin
MARGUERITE HENRICI AND DUBBELTJIES

- Excellent Botanist
- Studied Tribulus terrestris and other Karoo plants
- Physiology studied
- Findings not used and discounted
- Feeding dried plants failed to cause Geeldikkop

1930s & 1940s
JMM BROWN AND SELENIUM

• Excellent Physiologist
• Studied Geeldikkop and Enzootic Icterus long distance
• A time of great renewed interest in trace elements
• Selenium analysis was problematic
• Concluded that both diseases were caused by selenosis

1950s & 1960s
Mobile lab - c1900
Mobile lab # 2, c1958
VAN TONDER – BACK TO TRIBULUS

• Grazed sheep on Tribulus-only Geeldikkop-affected veld
• Caused classic Geeldikkop
• Histopathology better defined
• Frozen plants remained toxic
• Alcohol extracts were toxic

1960s & 1970s
Wilted dubbeltjies
Wilted & lush dubbeltjies
ENZOOTIC ICTERUS – GATHERING THE EVIDENCE

• Histopathology
• Pathology
• Blood and tissue chemistry
• Epidemiology
• Plant analyses
• Geology
• Conclusion: chronic copper poisoning

1970s
A DEVIATION INTO MYCOTOXICOSES

• An excellent toxicologist
• Progress with toxic fungi
• Lupinosis
• Facial eczema
• Tribulos? (question mark)
• Eventually discounted
• Isolated the toxic principle

1980s & 1990s
OTHER CONFUSERS IDENTIFIED

• Ganskweek – same area
• Vuursiekte
• Rift Valley Fever
• Bacterial icterus
• Leptospirosis
• Clostridial infections
• Verminosis
UNDERLYING CAUSE AND SOLUTION

• Little importance currently – why?
• Stock Reduction Scheme – 1970s
• Better veld management systems
• Veld improved
• Farm production improved
• Plants responsible were suppressed
• Underlying factor: poor veld management

1950s onwards
Mismanaged Karoo
Well managed Karoo