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RoXsta™ Delivers Effective Oxidative Stress Measurement in Cattle with Further Applications Identified for Bulls and also the Dairy Industry, Larger Bull Fertility Study Planned with Global Veterinary Partner

Key Highlights

- **Pilot study in heifers, conducted at the request of cattle industry stakeholders, demonstrated RoXsta™ ability to reliably measure antioxidant capacity, supporting further commercial potential for industry adoption.**
- **Whilst the study did not determine a statistically significant link between pregnancy outcome and oxidative stress, it offered valuable insights which showed supporting evidence to increase focus on bulls where oxidative stress is more closely linked to semen quality and fertility.**
- **RoXsta™ also demonstrated potential for early detection of mastitis in dairy cattle, with promising early results detecting the inflammatory condition which affects approximately 17% of dairy cattle[1].**
- **Planned study with 120 bulls to be fully funded and supported by a multinational veterinary pharmaceutical partner.**

Memphasys Limited (ASX: MEM), a reproductive biotechnology company focused on developing and commercialising innovative products for assisted reproduction, is pleased to provide an update on the RoXsta™ antioxidant assay system and its emerging applications in the livestock sector.

The Company recently completed a pilot study in heifers following a direct request from cattle industry stakeholders to explore whether oxidative stress markers measured by RoXsta™ could be used to predict pregnancy success after artificial insemination (AI). While the results did not demonstrate a statistically significant correlation between antioxidant levels and pregnancy outcomes in heifers, the study validated the functionality of the RoXsta™ system and identified further prospective applications in cattle reproduction.

Heifer Pilot Study

In December 2024, Memphasys and researchers from the University of Newcastle conducted a pilot study on 27 Angus heifers in the NSW Hunter Region. The study was initiated in response to interest from cattle industry stakeholders who were seeking a non-invasive method to predict pregnancy following AI.

Blood samples were collected from each heifer, processed on-farm to isolate plasma, and analysed using the RoXsta™ system to assess antioxidant capacity, expressed as vitamin C equivalents. The aim was to determine whether oxidative stress levels could serve as a reliable indicator of pregnancy success.

[1] ABEBE, R., MARKOS, A., ABERA, M. & MEKBIB, B. 2023. Incidence rate, risk factors, and bacterial causes of clinical mastitis on dairy farms in Hawassa City, southern Ethiopia. *Scientific Reports,* 13**,** 10945

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The analysis revealed no statistically significant difference in antioxidant levels between pregnant and non-pregnant animals. This outcome is consistent with the widespread but potentially inefficient use of mineral supplementation in commercial cattle operations, which is likely to minimise oxidative stress variability.

The pilot study also served as a further trial of the RoXsta™ system, assessing its technical capabilities as well as its functional use with live cattle within the commercial agriculture industry. Memphasys is pleased that the RoXsta™ system operated as intended and accurately measured antioxidant activity in the samples. Additionally, the pilot has assisted in identifying more targeted oxidative stress applications.

New Bull Fertility Study with Global Partner

Building on the outcomes of the heifer study, Memphasys will now shift focus to bulls, where oxidative stress has a more pronounced and measurable impact on reproductive health. Bulls undergo full spermatogenic cycles every eight weeks, and environmental stressors such as heat can negatively affect semen quality via oxidative pathways.

Memphasys is currently finalising a collaborative study with a multinational veterinary pharmaceutical company, which has committed to fund the project and supply samples. The study will evaluate 120 bulls across two stud farms in the NSW Upper Hunter Region, split into two groups: one receiving standard mineral supplementation and the other receiving the partner's patented multimineral formulation.

Blood and semen samples will be collected at baseline, mid-point, and end-point, with antioxidant capacity assessed using RoXsta™, alongside detailed semen quality analysis.

The study will be led by Professor John Aitken, a globally recognised leader in reproductive science and Memphasys Research Director.

Dairy Industry Potential

Memphasys is also pursuing opportunities in the dairy industry, where oxidative stress plays a critical role in the onset of mastitis — an inflammatory condition affecting approximately 17% of dairy cattle globally. Mastitis requires antibiotic treatment and results in significant production losses due to milk withholding.

Working with Charles Sturt University and the University of Newcastle, Memphasys is assessing whether daily testing of milk using RoXsta™ can detect oxidative changes in early-stage mastitis, enabling timely intervention and reduced economic impact. Preliminary data from this initiative has been encouraging, and further studies are planned.

Dr David Ali, Managing Director and CEO of Memphasys, said:

"RoXsta™ continues to demonstrate its versatility as a scientifically robust and commercially scalable diagnostic tool. These trials have seen RoXsta™ used in a commercial agricultural farm and proven that the system operates simply, easily and offers reliable results. While only a small pilot study, the results are encouraging with the research team able to determine further target areas for future application – namely in bulls as well as mastitis in the dairy industry. Additionally, RoXsta™ continues to be closely followed by our peers and I am pleased to see that a leading veterinary pharmaceutical company has agreed to fund a larger research trial with 120 bulls, offering a clear signal of the industry appetite for improved oxidative

stress diagnostics. These developments represent a significant step forward and I look forward to providing further updates as the technology is progressed."

Authorised by the Board of Memphasys Limited.

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About Memphasys Limited

Memphasys Limited (ASX: MEM) specialises in advanced reproductive biotechnology, developing medical devices, diagnostics, and proprietary media for human and animal applications. With flagship technologies like the Felix™ and RoXsta™ Systems, Memphasys is committed to delivering transformative solutions that enhance fertility outcomes worldwide.

Website: www.memphasys.com