A NON-ANTIBIOTIC APPROACH TO IMPROVING UDDER HEALTH IN IRISH DAIRY COWS

Nicole Keohane McCarthy [1], Mike Walsh [1], Johanna Fink-Gremmels [2], David O'Neill [1], Thomas Curran [1], Adam Robinson [3], Floris Herrema [3], Geoffrey Ackaert [3], Denise O'Meara [1]

1. Eco-Innovation Research Centre, School of Science and Computing, South East Technological University (SETU), Cork Road, Waterford, Ireland
2. Institute for Risk Assessment Sciences, Utrecht University, Utrecht, Netherlands // 3. AHV International, Schokkerweg 10, 8042 PC, Zwolle, Netherlands

INTRODUCTION

- **Antimicrobial resistance** is a growing concern, leading the European Commission to enforce **Selective Dry Cow Therapy (SDCT)** under Regulation (EU) 2019/6. [1], [2]
- **Transitioning** from Blanket Dry Cow Therapy (BDCT) to SDCT requires changes in practices and mindset among farmers and veterinarians.
- This study investigates the **effectiveness of AHV's** non-antibiotic udder health protocol was assessed for its effect on SCC, milk production and as a preventative measure for new intramammary infections (IMI) in Irish dairy herds.

MATERIALS AND METHODS

Study Design:

Conducted on four dairy farms in southern Ireland, involving 155 cows in their third lactation or below.

Treatment Groups: Randomized control regardless of SCC prior to dry-off

- Reference Group: Dry-Cow Antibiotics with teat sealer (80 cows).
- AHV Group: AHV products 30-60 days prior to dry-off (Aspi, Quick, Extra tablets) with teat sealer (75 cows).
  - Aspi, Quick & Extra tablets contains extracts of Herbal blends dedicated to immunomodulation and Quorum Quenching mechanisms (QQ). [4]

Data Collection: Milk samples at pre-treatment, early lactation, and mid-lactation stages analyzed for SCC, milk yield, and mastitis pathogens via qPCR.

RESULTS

1. **SCC:** Log-transformed SCC data revealed **no significant differences** between the treatment groups in the new lactation
2. **Milk Quality: No significant differences** in milk yield, fat, and protein content between the groups.
3. **Mastitis Prevalence:** New intramammary infections were **lower in AHV group** (2.67% in AHV vs. 6.25% in reference).
4. **Farmer Reluctance**
   - Farmers were hesitant to adopt Selective Dry Cow Therapy (SDCT) due to fears of increased mastitis cases.
   - Many cows did not meet the strict criteria required for SDCT eligibility in AHV group.
   - Some farmers lacked trust in non-antibiotic treatments.
5. Pathogen Prevalence: ***Staph. aureus*** showed a significant difference in mid-lactation, being **absent in the AHV group** but present in the reference group ($p = 0.046$).

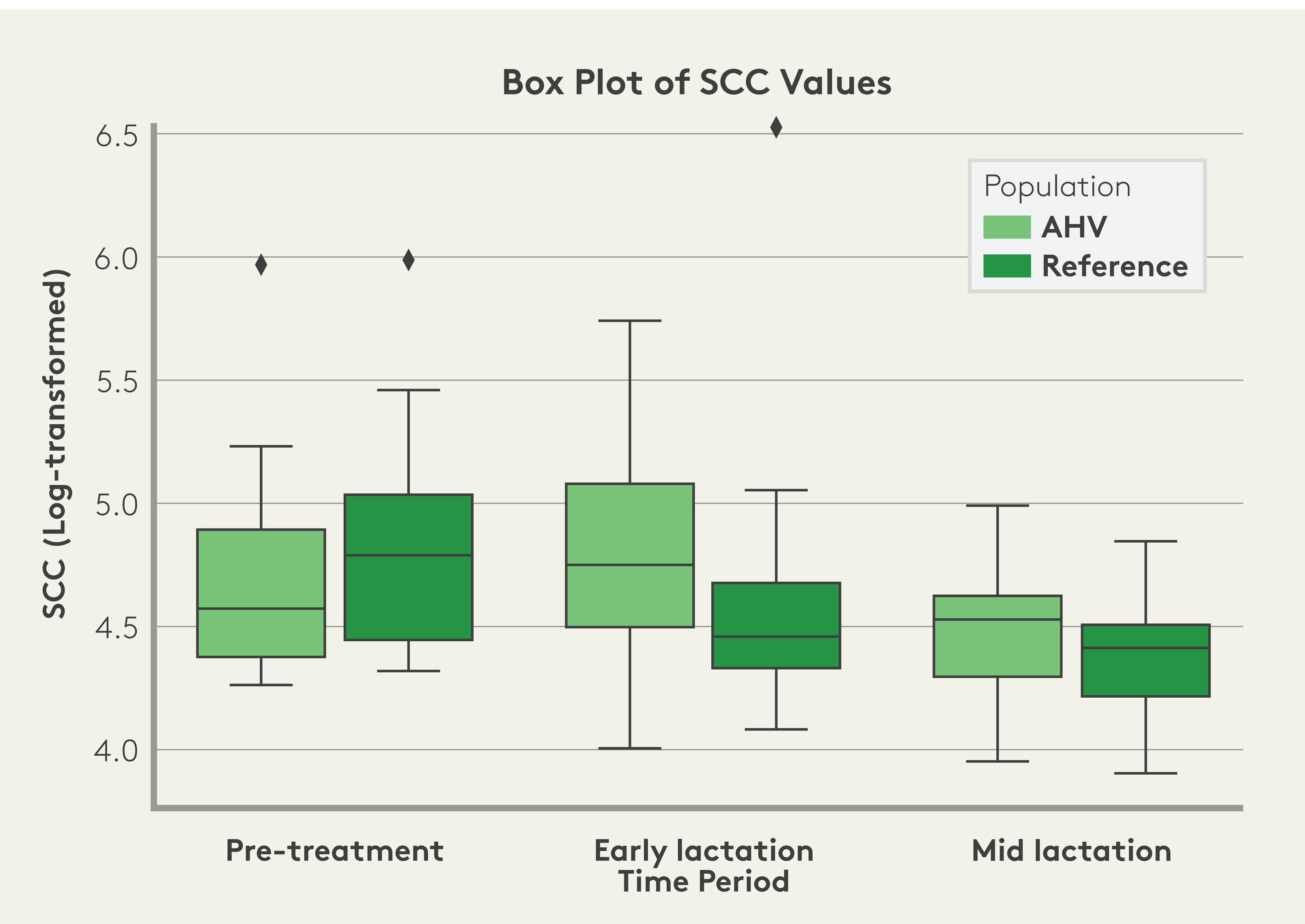

Figure 1: Boxplot of log-transformed SCC data illustrating the distribution of SCC in the AHV and reference treatment populations across pre-treatment, early lactation, and mid lactation.

- At pre-treatment, 10.75% of the cows in the AHV population, and 10% of the cows in the reference population was observed as having a high SCC.

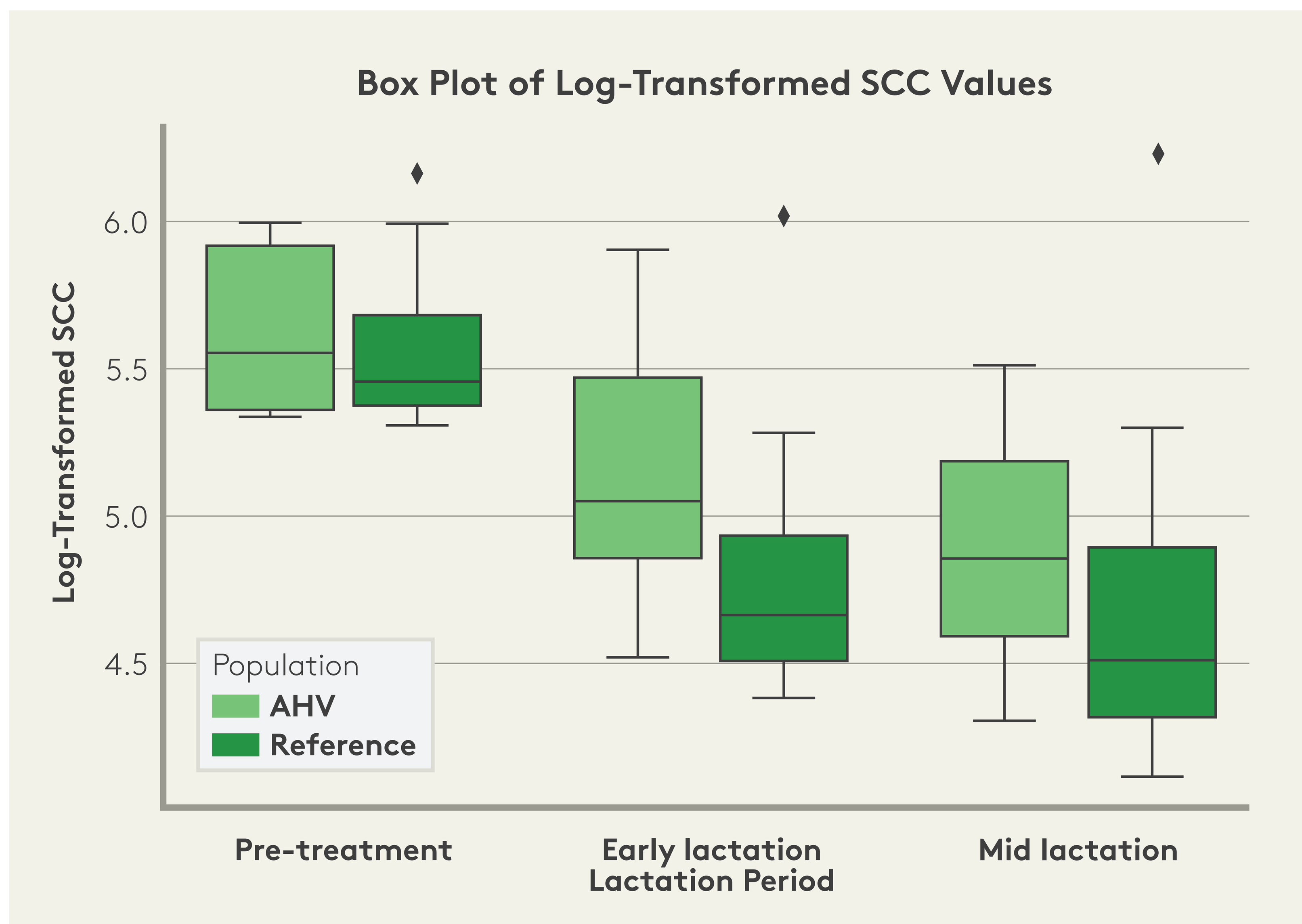

Figure 2: Boxplot of log transformed SCC data for a separate analysis of for the sub-group of cows with a high SCC at pre-treatment

- No statistically significant differences between the two populations at any of the time points.

SYNTHESIS

of the AHV dry-off protocol:

1. Potential as a non-antibiotic alternative for new intramammary infection prevention and can significantly reduce the prophylactic reliance on antibiotics for dry-cow treatment in cows with both low and high SCC.
2. Potential as a preventive measure in reducing Staphylococcus aureus prevalence.
3. Does not negatively impact milk yield or quality.
4. Further research with larger sample sizes, diverse lactations is necessary to validate these findings.
5. Further research will compare: BDCT, SDCT and AHV preventive udder health protocol without teat sealant at dry-off.

References

1. Council recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach (2023/C 220/01)
2. https://eur-lex.europa.eu/eli/reg/2019/6/oj
3. McCarthy Keohane N (2024) A Non-Antibiotic Approach to Improving Udder Health in Irish Dairy Cows. MSc Thesis, South East Technological University, Ireland.
4. Streefland GJ, J. De Rooy J., and F. Herrema, 2024, Sustainably improving animal health. 2024, Dairy Global, Vol., 11, No. 2, 26-27

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