



“Investigation of an antimicrobial use (AMU) reduction in tylosin on the severity of liver abscesses and antimicrobial resistance (AMR) in Enterococci in feedlot cattle.”

## CAN TYLOSIN USE BE REDUCED?

**PROJECT NO.:** ANH.13.16

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**Background:** There is increasing public scrutiny on beef production, including antimicrobial use (AMU). By volume, the vast majority of AMU in beef cattle are antimicrobials delivered via feed to control liver abscesses. Liver abscesses continue to be a significant economic and welfare challenge for the beef industry. The last Canadian Beef Quality Audit estimated that liver abscesses cost the beef industry almost \$30 million per year.

Liver abscesses are caused by the entry and growth of bacteria in the liver, primarily by *Fusobacterium necrophorum* and *Trueperella pyogenes*, though other bacteria are also often involved. It is currently unclear which species of bacteria that have been isolated from liver abscesses are responsible for causing the infection and which colonize after the infection has begun. The use of tylosin to prevent and reduce liver abscess severity is common practice, but limited data exists as to whether it needs to be fed throughout the entire feeding period in order to achieve the desired reduction in liver abscesses, or what effect tylosin has on the development of AMR in the bacteria involved with liver abscess formation.

**Objectives:** The objectives of this study are to:

- Determine the effects of reducing in-feed tylosin administration by 25% on liver abscess incidence and severity.
- Determine the effects of the reduced tylosin use on the development of AMR in *Enterococcus* species.
- Identify the diversity and AMR profiles of the microbiota associated with liver abscesses in both conventionally fed cattle and cattle administered 25% less tylosin during the feeding period.
- Examine the development of AMR in bacterial species associated with liver abscesses from both conventionally raised and cattle exposed to 25% less tylosin.

**Implications of the Research:** If tylosin administration can be reduced by 25% without increasing the prevalence or severity of liver abscesses, this could represent a significant management change for the feeding industry with the dual benefit of reducing AMU in the beef industry and potential cost savings for producers.

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