Sheep CRC 2010 Conference Proceedings

Document ID:	SheepCRC_31_38
Title:	Investigation of eosinophil-specific galectin-14 as a genetic marker for resistance to Haemonchus contortus
Author:	S. Preston, E. N .T. Meeusen, S. Walkden-Brown and D. Piedrafita
Key words:	sheep; genetic marker; haemonchus contortus;

This Postgraduate paper was presented at the Sheep CRC Conference held in 2010, as part of the Sheep CRC presentations. The paper should be cited as:

S. Preston, E. N .T. Meeusen, S. Walkden-Brown and D. Piedrafita (2010) – *Investigation of eosinophil-specific galectin-14 as a genetic marker for resistance to Haemonchus contortus*

Investigation of eosinophil-specific galectin-14 as a genetic marker for resistance to *Haemonchus contortus*

S. Preston[BC], *E. N .T. Meeusen*[B], *S. Walkden-Brown*[A] *and D. Piedrafita*[B]

[A]Australian Cooperative Research Centre for Sheep Industry Innovation, Homestead Building, University of New England, Armidale, NSW 2351, Australia.
[B]Biotechnology Research Laboratory, Monash University, Melbourne, Vic. 3800, Australia.
[C]Corresponding author. Email: sarah.preston@monash.edu

SUMMARY

Resistance to nematode infection has been shown to be immunologically mediated and associated with genetic background. Galectin-14 (gal-14) is an eosinophil-specific protein that has been identified as a mediator of parasitic infection (Dunphy *et al.* 2002). The aim of this study was to determine the relationship between gal-14 and worm burden in sheep and to assess its potential as a marker for nematode resistant sheep.

As part of a previous study, 30 eight-month-old Merinos wethers were treated for existing nematodes and randomly assigned into 2 treatment groups. One group was vaccinated with a larval antigen and adjuvant prior to a challenge with 2 × 5000 *Haemonchus contortus larval* antigen, which was administered orally. The control group only received the challenge. Abomasal mucus scrapings were collected and worm burdens were recorded. Mucus scrapings were analysed using Western blotting (Kemp *et al.* 2009). Nonparametric statistics were used to determine significance.

Our results showed that a greater number of sheep vaccinated against *H.contortus* released gal-14 into the mucus compared with unvaccinated sheep, suggesting that immunization increased tissue eosinophil recruitment. The positive relationship between gal-14 and worm burden in the vaccinated group suggests that gal-14 is not directly involved in immunity against adult worms but could be an indicator of worm burden. However, the relationship between gal-14 and larval worm burden remains to be investigated.

REFERENCES

Dunphy JL, Barcham GJ, Bischof RJ, Young AR, Nash A and Meeusen ENT (2002) Isolation and characterization of a novel eosinophil-specific galectin released into the lungs in response to allergen challenge. *Journal of Biological Chemistry* **277**, 14916–14924.

Kemp JM, Robinson NA, Meeusen ENT and Piedrafita DM (2009) The relationship between the rapid rejection of *Haemonchus contortus* larvae with cells and mediators in abomasal tissues in immune sheep. *International Journal for Parasitology* **39**, 1589–1594.