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for

Premium

Quality

Wool

#### **Sulfur Amino Acids and Wool Growth**

Produced for the CRC for Premium Quality Wool undergraduate program by; Prof Phil Hynd, The University of Adelaide.

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### Cysteine is the first-limiting amino acid for wool growth

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30

0

Wool growth rate (g/d)

maximum wool growth is achieved at approx. 3-3.5g/d L-cysteine at intestines

#### 0 0.5 1.0 1.5 2.0 2.5 3.0 Cysteine postruminal supply (g/day)

www.woolwise.com

Phil Hynd



## Commercial protected methionine products

eg 'Smartamine' (Rhone Poulenc Pty Ltd)

CRC 15 Wool growth rate Weight gain 80 for 60 10 Premium **40** Quality 5 20 Wool 0 control methionine methionine control





### Cysteine supply influences fibre composition

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paracortex Sulfur content ultrahigh S mRNA (arbitrary units)

14% 2.5% 1

control period

43% 3.7% 4

cysteine (2g/d)

infused

intravenously

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Sources of cysteine for wool growth

- Absorbed from GI tract (microbial or from undegraded dietary protein)
- Endogenous sources (protein turnover)
- Transulfuration (i.e. from methionine)

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L-methionine

**S-adenosylmethionine** 

L-homocysteine

L-cystathionine

L-cysteine L-cystine



# Genetically- high producing sheep have:

- Iower plasma cysteine and lower wool S
- greater total wool S output
  wool S x wool growth rate

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- greater cysteine uptake into wool ?
- less cysteine for other functions
  - for example for glutathione synthesis for the immune system?



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Is wool S concentration a useful predictor of genetic wool growth potential??

 NIR method for assaying wool S content has been developed

 The genetic parameters for wool S being determined

 There may be a relationship to parasite resistance

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