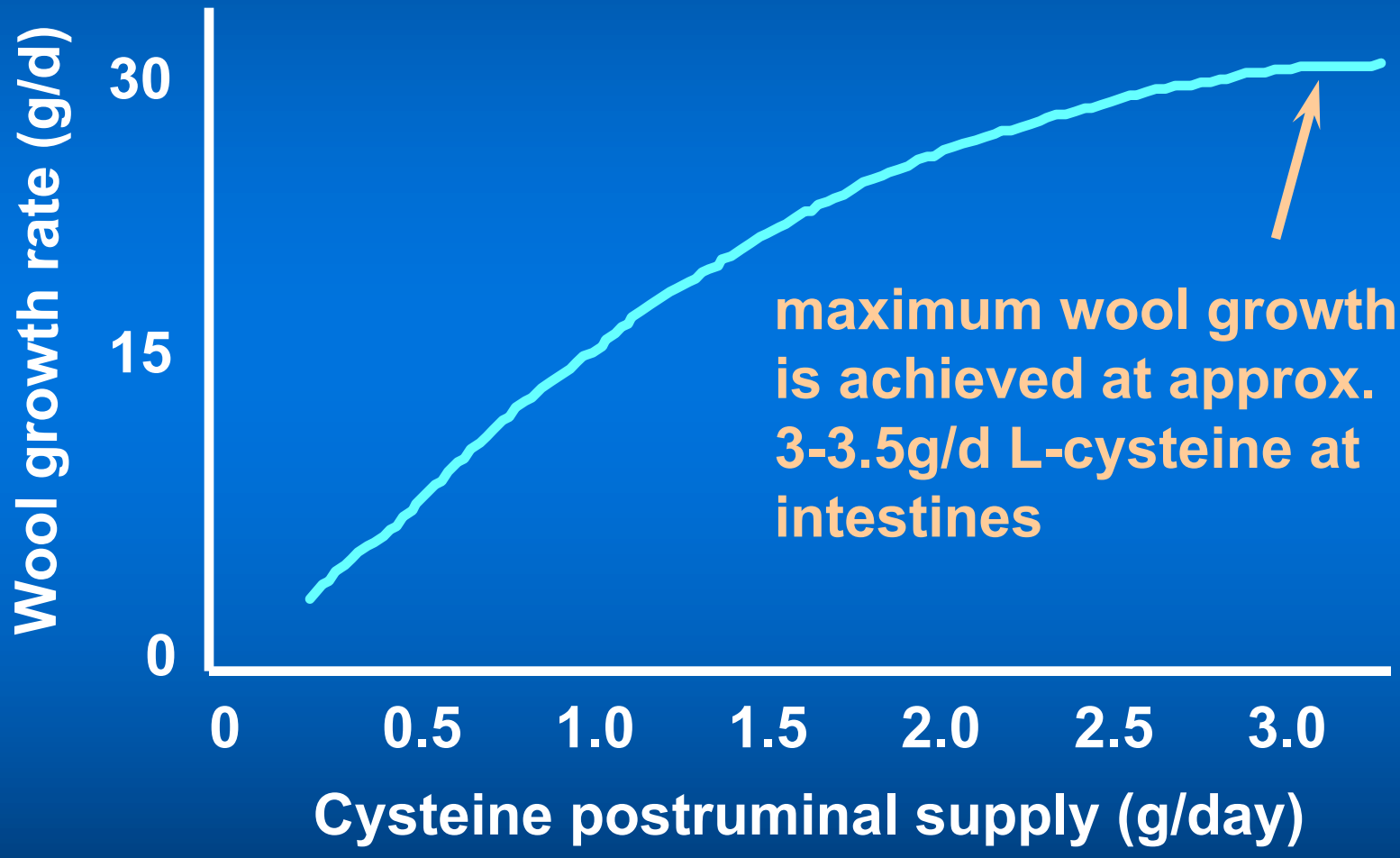
CRC for Premium Quality Wool

Sulfur Amino Acids and Wool Growth

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

Cysteine is the first-limiting amino acid for wool growth



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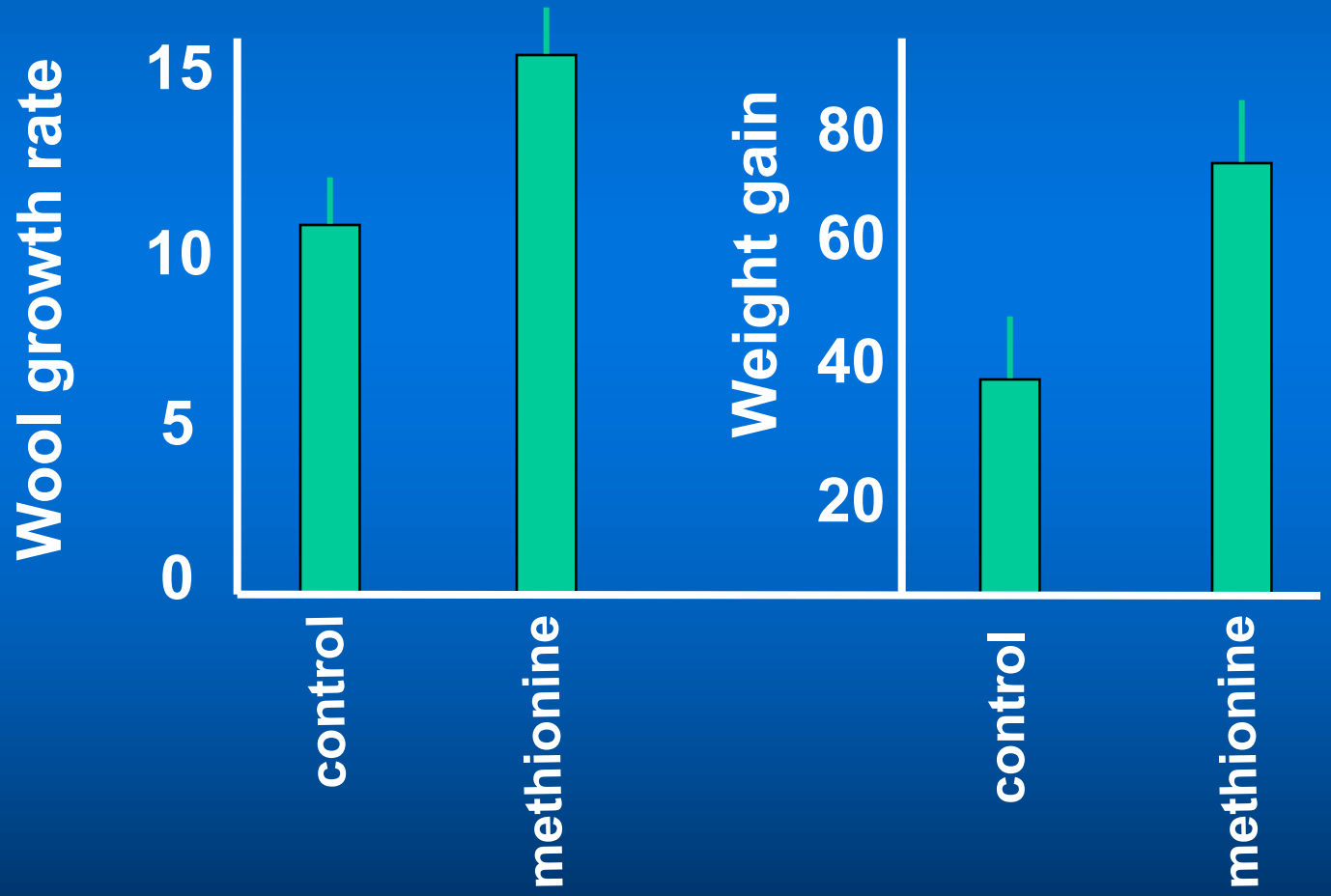
Commercial protected methionine products

eg ‘Smartamine’ (Rhone Poulenc Pty Ltd)



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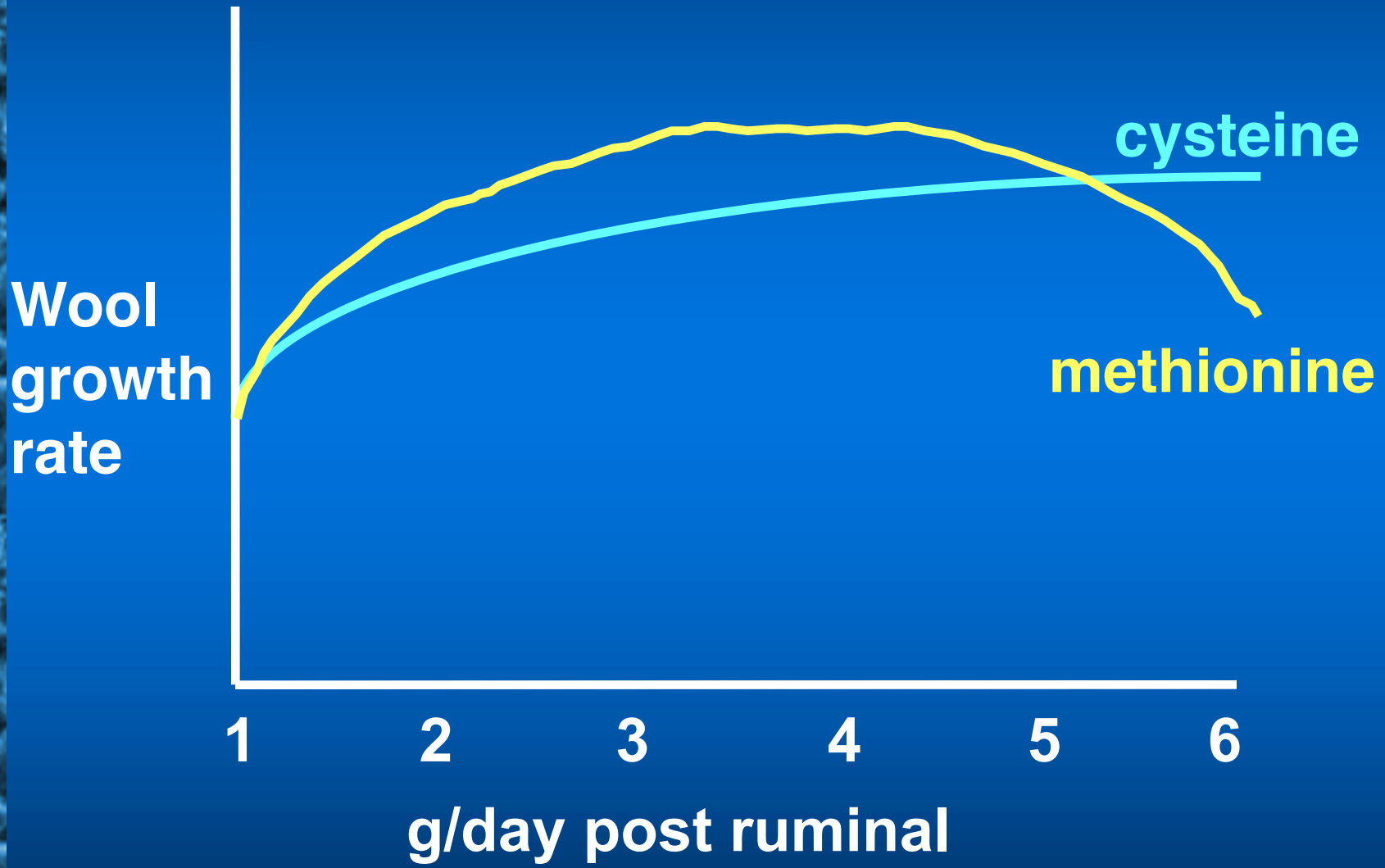
Both sulfur amino acids limit wool growth



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Cysteine supply influences fibre composition

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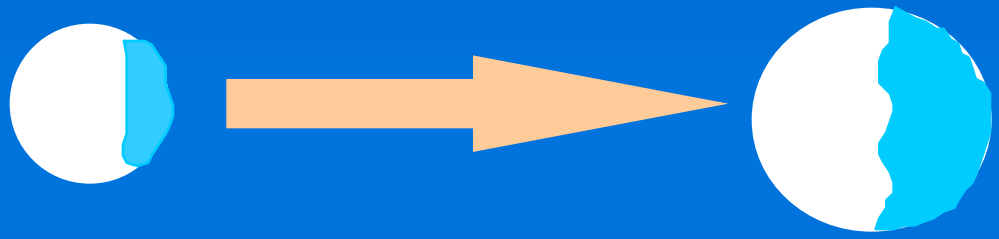
control period

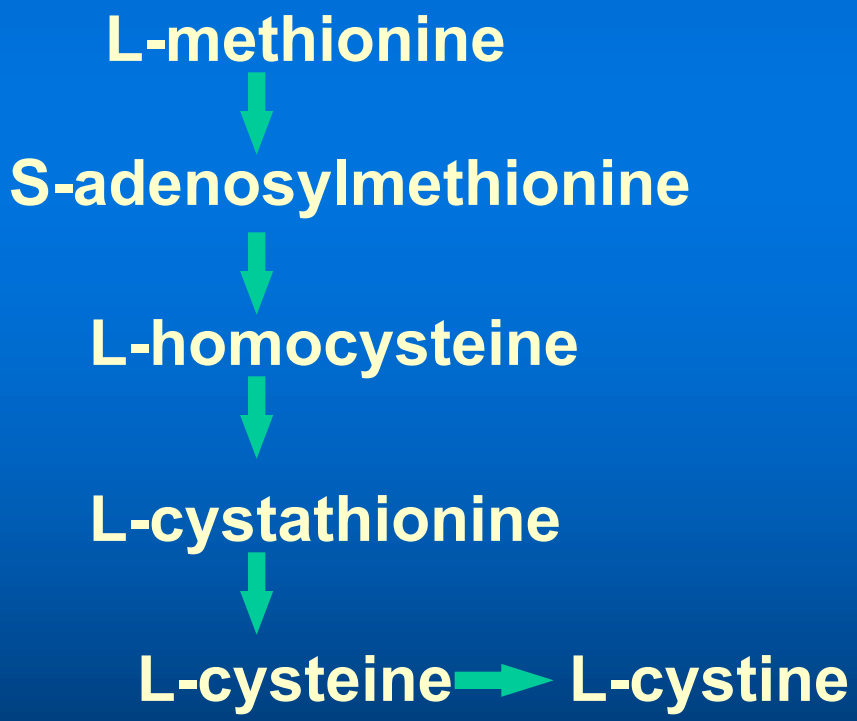
cysteine (2g/d) infused intravenously



paracortex	14%	43%
Sulfur content	2.5%	3.7%
ultrahigh S mRNA (arbitrary units)	1	4

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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Genetically- high producing sheep have:

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