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Factors That Influence the Supply of Energy to the Follicle

Produced for the CRC for Premium Quality Wool undergraduate program by;
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1. Supply of energy substrates to the skin

- Blood flow to the skin is high but variable
 - approximately 300 ml/min to total skin
 - which is 6% of cardiac output

BUT

- Skin uses only 1.4% of whole body **OXYGEN** utilisation
- **ANAEROBIC** metabolism must be operating in the skin

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2. Concentration of energy substrates in the blood

- glucose (carbohydrate) and glutamine (amino acid) are the major substrates for energy production in the follicle
 - glucose - 2.95-3.81 mM
 - glutamine - 0.5-0.6 mM (20-25% of total plasma amino N)

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3. Transport of energy substrates into the cell

- **glucose**
 - facilitated by glucose transport proteins (Gluts)
- **glutamine**
 - actively via various amino acid transport systems

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4. Use of absorbed energy substrates

GLUCOSE is metabolised by

- anaerobic or aerobic glycolysis (>90%)
- TCA cycle (6-7%)
- pentose phosphate pathway (3-4%)

GLUTAMINE is metabolised by

- complete oxidation (15-25%)
- glutaminolysis (65-75%)

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