Factors That Influence the Supply of Energy to the Follicle

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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
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)
3. Transport of energy substrates into the cell

- **glucose**
  - facilitated by glucose transport proteins (Gluts)

- **glutamine**
  - actively via various amino acid transport systems
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%)