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# How does a sheep learn about a new food?

Produced for the CRC for Premium Quality Wool undergraduate program by;  
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# Identification of Food

- **Cues**
  - Visual (general location)
  - Olfactory or texture (mouth)
    - Innate responses?
  - Taste (swallow)
    - Innate responses?
- **Sensory Specific Satiety**
  - concept that animals will always include a small amount of a less preferred food.

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# Effects of sweet, sour, salt and bitter on lucerne intake of sheep

**Table 1.3.** The effect of various concentrations of sweet (sucrose), sour (HCl), salt (NaCl), bitter (urea) and umani (monosodium glutamate, MSG) on intake of lucerne pellets.

	Concentration		
	Low	Medium	High
Sucrose	b	b	b
HCl	c	c	b
NaCl	c	c	c
Urea	b	b	b
MSG	a	a	a

a = Increased intake compared to control.

b = Decreased intake compared to control.

c = Similar intake compared to control.

Source: Grovum and Chapman (1988).

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# Sensory Impairment and learning about wheat

**Table 1.2.** The number (total of 16 per group) of sensory impaired sheep which accepted wheat over 5 days, and the mean wheat intake (grams per head) for five days.

Treatment	Number of animals feeding by day 5	Mean wheat intake/head (g)
Blind	14	460
Deaf and anosmic	13	362
Deaf	14	316
Deaf and blind	9	305
Control	15	198
Deaf, blind and anosmic	6	177
Anosmic	14	165
Anosmic and blind	9	141

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# Experience

- **Neophobia - “fear of new”**
  - **Feeding sequence ?**
    - Do animals establish a pattern of “testing?”
  - **Overcome by learning (social facilitation)**
    - The rate of learning about new foods is influenced by maternal food choices
  - **Cue associations and early experience**
    - There is a possibility that animals are more sensitive to some sensory cues early in life

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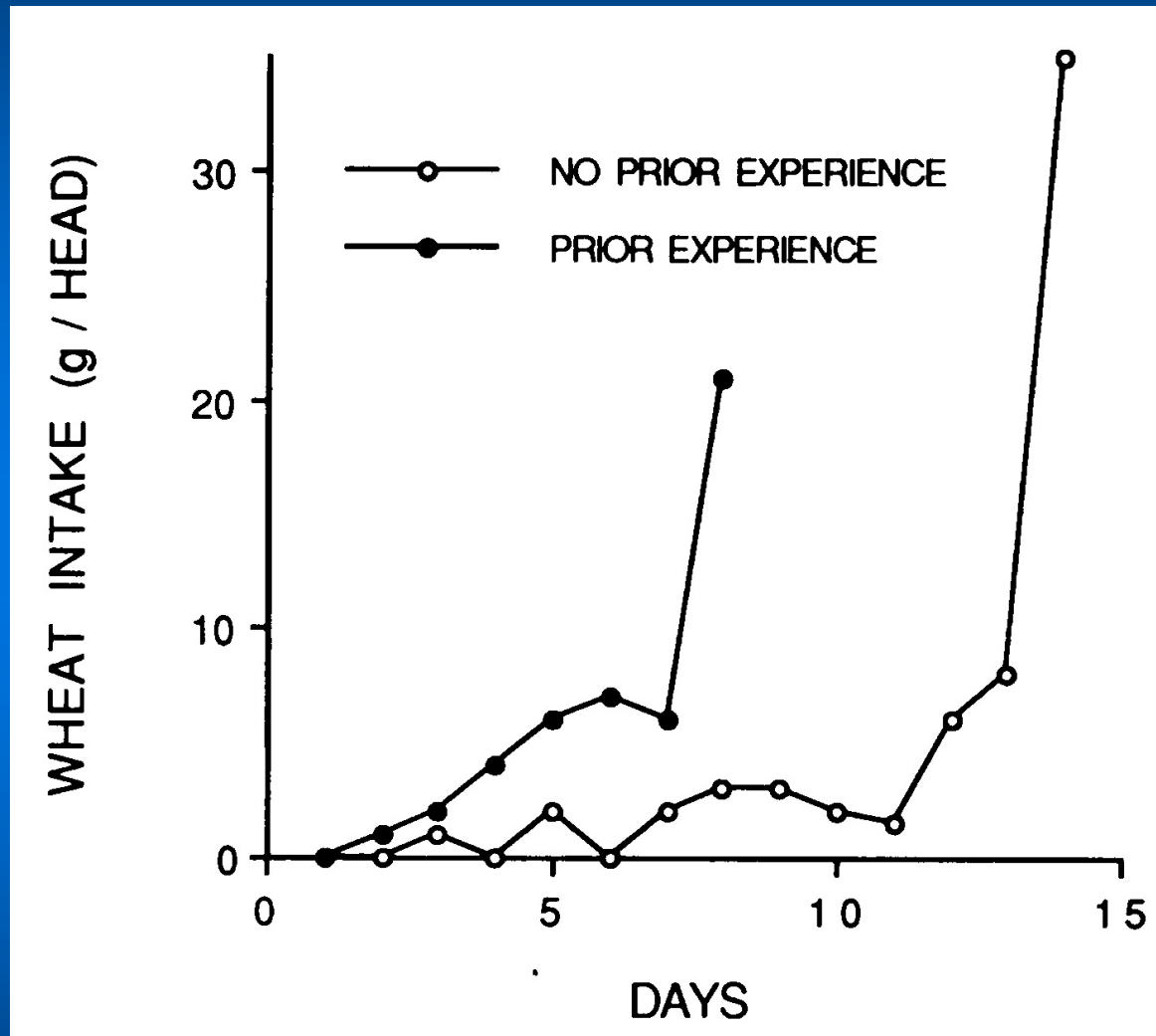
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# Learning about a new food - wheat



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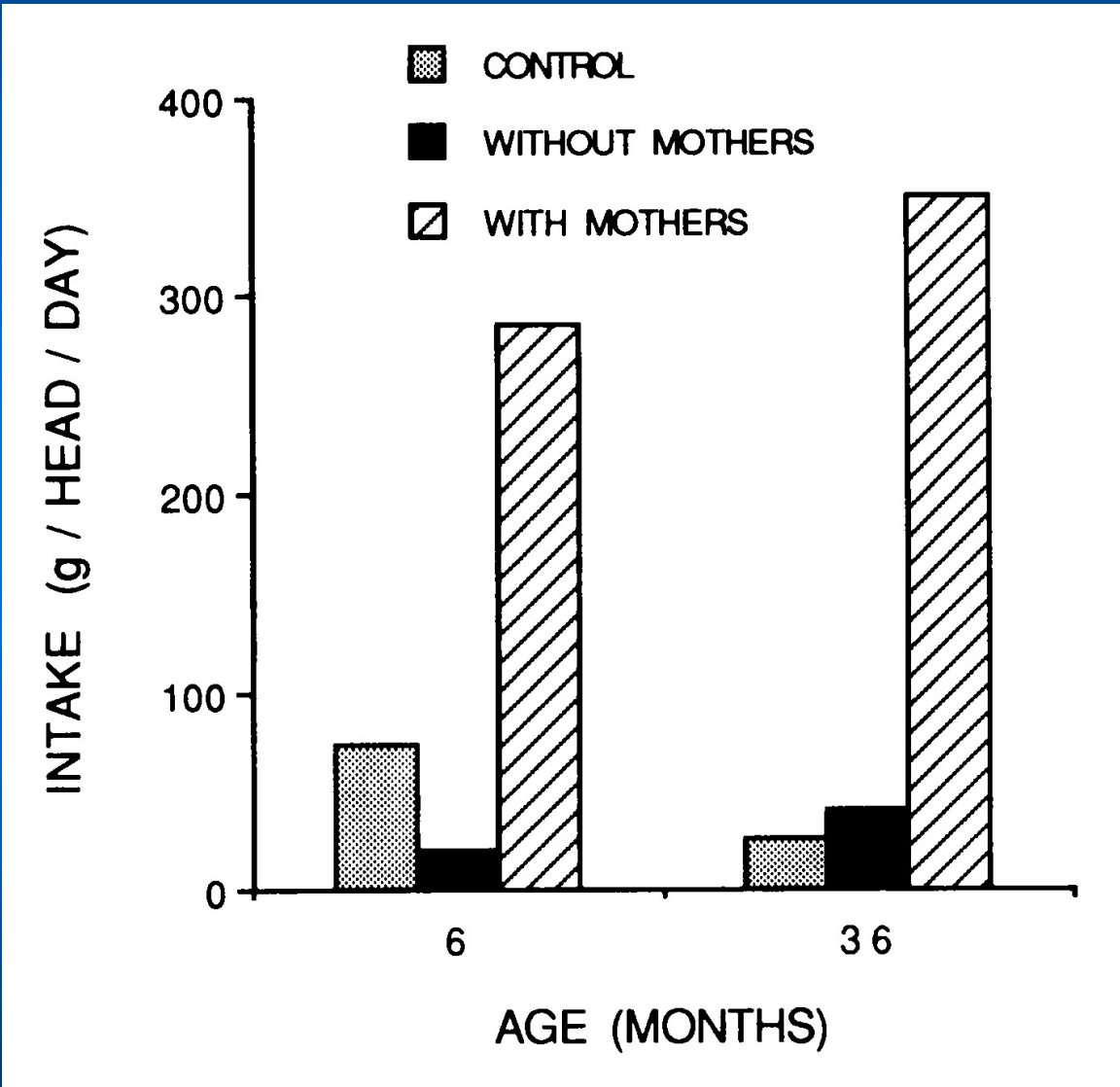
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# Social effects on learning about food

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# Sensitive Period for Cues?

- **Cues : Flavour and Odour**
  - learnt via olfactory learning vs innate?
  - sensitive period in early life?
  - hormonal modulation of olfactory sensitivity?
- **Flavour Enhancers**
  - Not an issue for grazing animals but of interest to feed manufacturing companies for supplementary feeds and or specialised feeds for monogastrics.

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# Post-Ingestive Consequences

- The memory about a food is associated with the link between cues and post-ingestive outcome.
- Negative post-ingestive outcome creates an Aversion?
  - Toxins - alkaloids, phenolics (tannins), terpenoids
- Positive post-ingestive effects difficult to demonstrate. Maybe associated with the correction of a nutrient imbalance?

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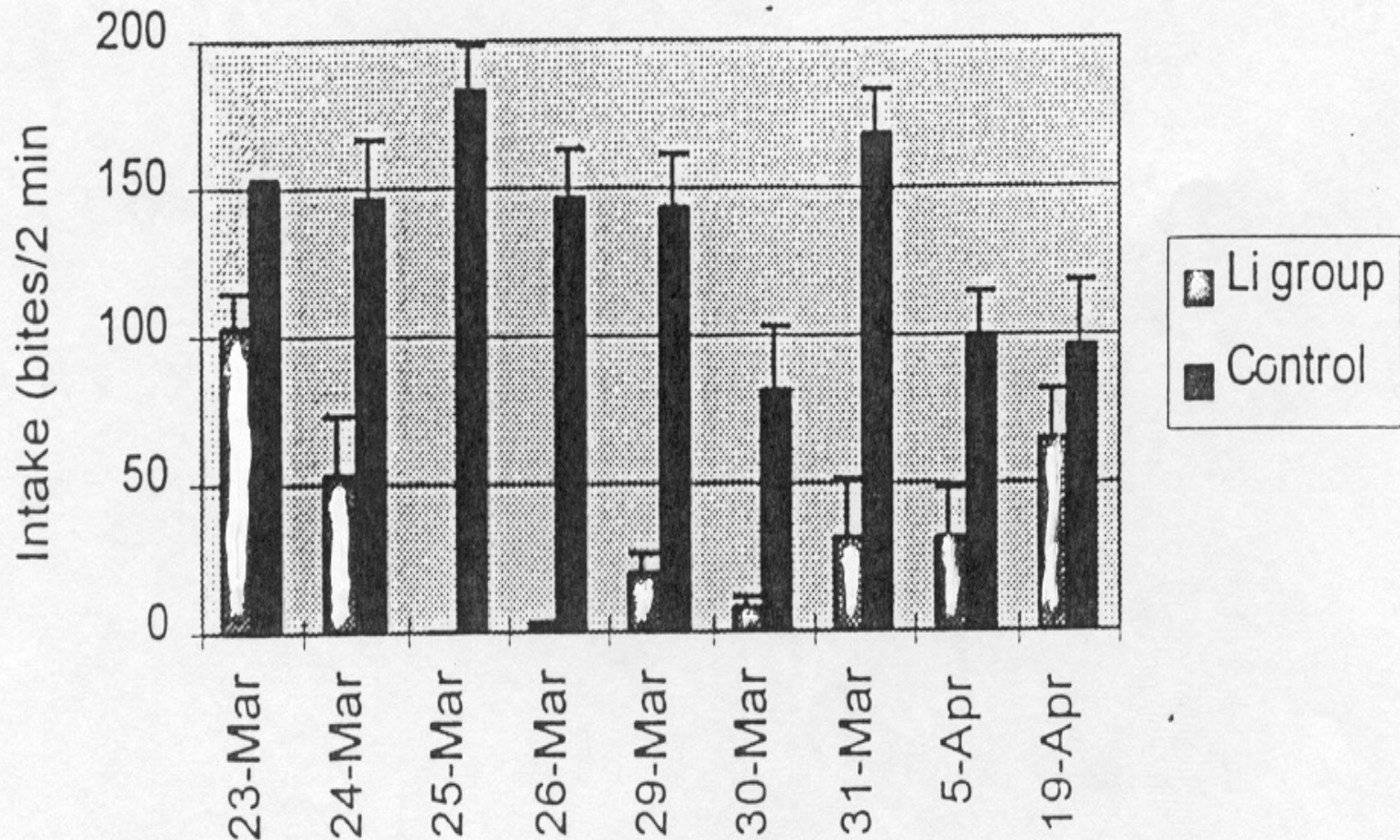
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# Loss of an Aversion to Lucerne

## Disappearance of Li-induced Aversion to Lucerne



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