

ASC 406/606

Lecture [20]

Protein and Amino Acids

**Digestion & Absorption of Protein
in Ruminants**

Dietary protein:

- 1)
- 2) (NPN)

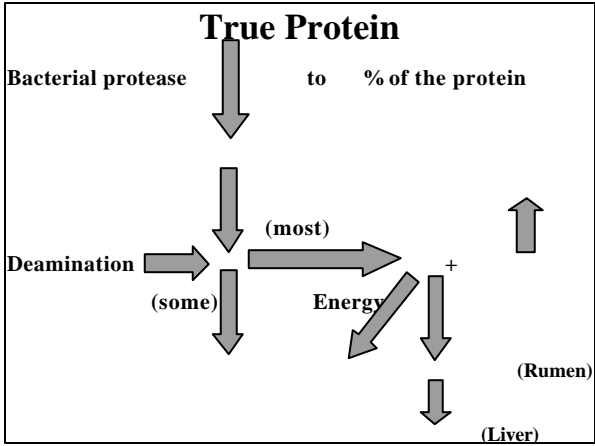
Ruminants are able to utilize both fractions

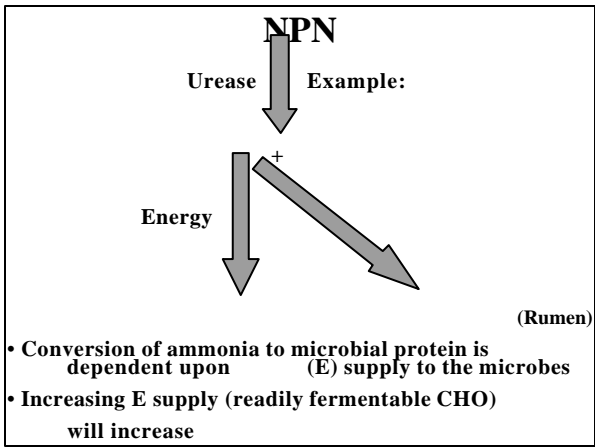
True Protein

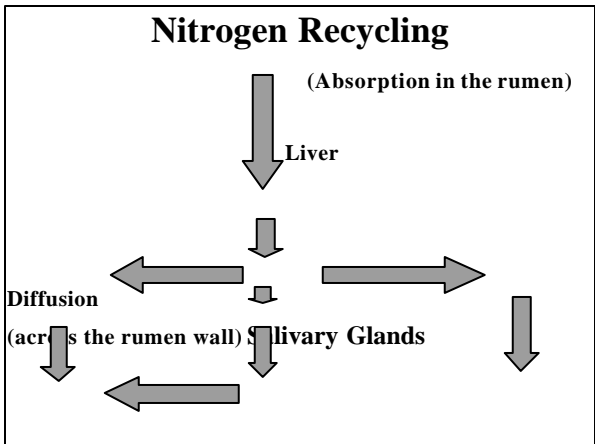


to % of the protein
(depending on the protein source)
Pass directly to the small intestine

Digestion is similar to non-ruminants







Effects of Dietary Protein Level

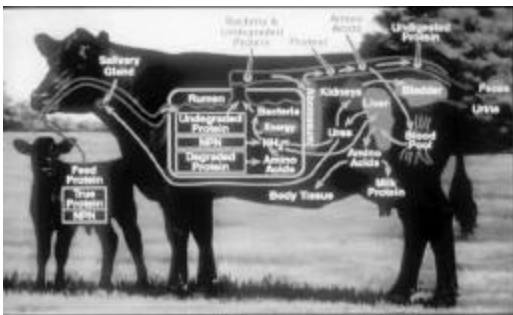
Feeding adequate levels of CP (> 12%)

- Most NH_3 is lost in the urine
- N recycling is not extremely important
- Contribution of N recycling ~ 10% of N intake

Feeding inadequate levels of CP (< 12%)

- N recycling is very important
- The process is very efficient
- Contribution of N recycling ~ 30% N intake

Digestion & Absorption of Protein in Ruminants (Summary)



Microbial Protein

Importance

- Contributes about 10% of the amino acids reaching the small intestine when animals are fed high protein diets
- Contributes about 30% of the amino acids reaching the small intestine when animals are fed low protein diets
- Contributes 50% of the amino acids reaching the small intestine when animals are fed a purified diet with only NPN supplementation

Microbial Protein

Importance

- Bacterial protein has ~ % CP
- Protozoal protein has ~ % CP
- Microbial protein is considered a high-quality protein

Microbial Protein

Factors affecting microbial protein synthesis

-
- (readily fermentable carbohydrates)
-
-

Protein Degradation

Protein Supplement	Degraded, %	Escape, %
Blood meal	31	69
Cottonseed meal		
Feather meal	29	71
Fish meal		
Canola meal	77	23
Soybean meal		
Alfalfa hay		
Corn	48	52
