

# DEPARTMENT OF ANIMAL NUTRITION

---

**TOPIC – UTILIZATION OF NPN SOURCES IN RUMINANT**

## NPN [ NON PROTEIN NITROGENOUS SOURCES]-

- ✓ Feed stuffs which contain nitrogen in the form of other than protein or peptides are termed as NPN sources.
- ✓ There are various sources of NPN used in livestock feeding , but two sources are mainly used.

- ✓ UREA
- ✓ AMMONIA
- ✓ BIURET



# Non-protein nitrogenous sources for ruminants

	Name	Nitrogen content(%)
1.	Ammonium acetate	18
2.	Ammonium bicarbonate	18
3.	Ammonium carbonate	36
4.	Ammonium lactate	13
5.	Biuret	35
6.	Dicynodimide	67
7.	Glutamine	19
8.	Glycine	19
9.	Urea-pure	46.7
10.	Urea- feed grade	42-45
11.	Oilseed meals	5.8-8.0



# Pathways of Digestion and Metabolism of Nitrogenous Compound in the Ruminants

Digestion and Absorption of Proteins and Nitrogen Compounds in ..... Nitrogen 211

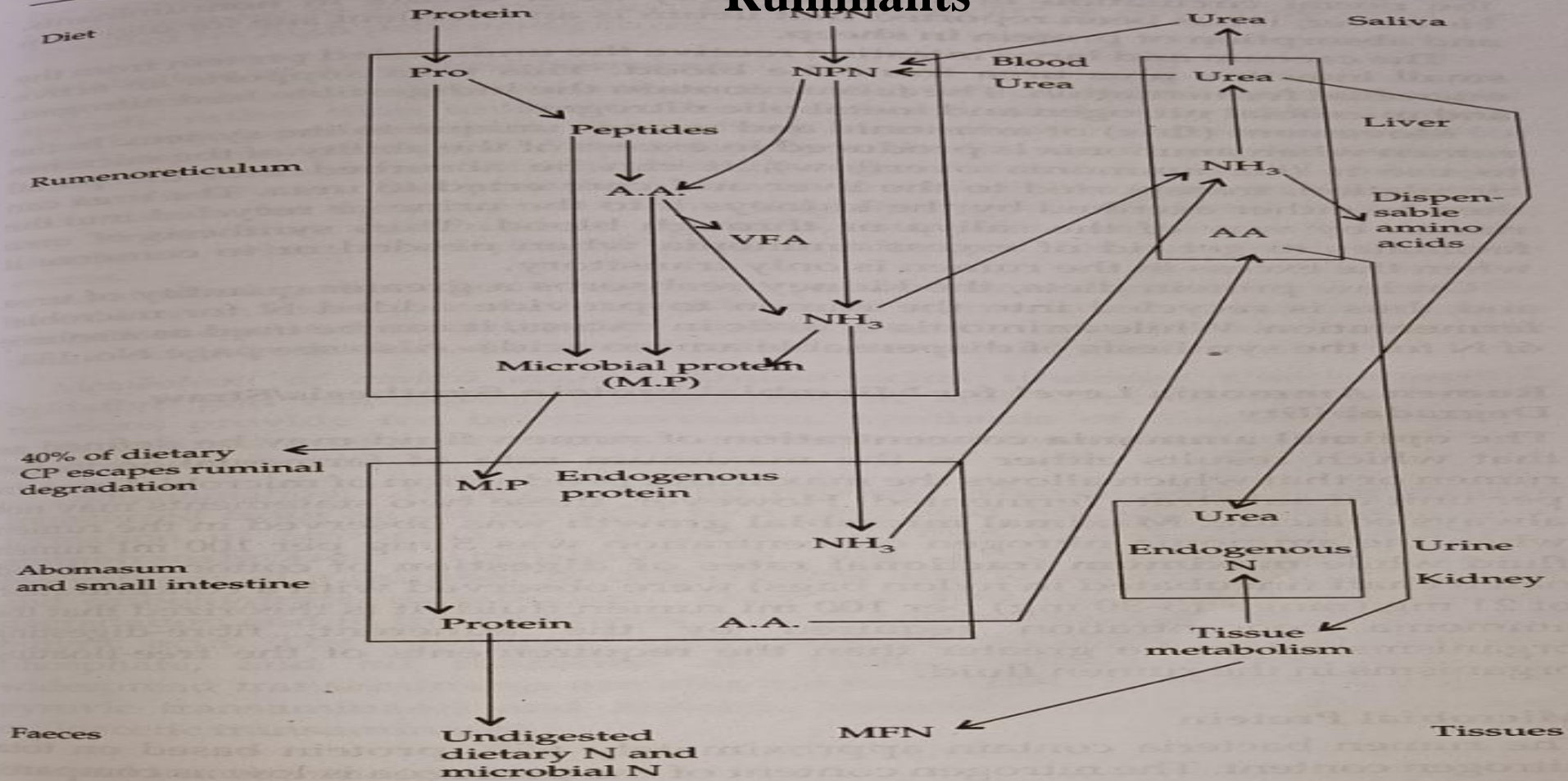


Figure 1. Pathways of Digestion and Metabolism of Nitrogenous Compounds in the Ruminant.

# Role of NPN in Ruminants nutrition

---

- ✓ In ruminants, the central component for the synthesis of protein is  $\text{NH}_3$  .
- ✓ The ammonia can be derived from metabolism of feed protein or directly from NPN compound.
- ✓ Urea is the most commonly used NPN .



# Feeding guidelines of NPN

- ❖ While NPN does serve as a cheaper alternate of protein for ruminants, it should also be kept in mind that NPN are not true protein.
- ❖ Alone NPN feeding can not replace the whole protein requirement.
- ❖ Introduce NPN ration slowly as 2-3 week period is necessary for rumen bacteria to achieve maximum utilization of NPN.
- ❖ The crude protein should not be more than 12 percent in the ration.

- Make sure that no more than 1/3 rd of the total ration protein equivalent comes from NPN.
- NPN should not be given to Monogastric animals like pigs , poultry etc.
- NPN should not be fed to calves below 6 months of age because of under developed rumen.
- Ensure adequate amount of water during NPN feeding.

# UREA

- It's a white compound with bitter taste for Ruminants.
- Having 46% Nitrogen.
- One kilogram of urea can furnish as much as 2.92kg of protein.
- When Urea enters the rumen it is rapidly dissolved and hydrolyzed to ammonia by bacterial urease.



# Methods of urea feeding

---

1. Urea in concentrate mixture
2. Urea treat
3. Uromol -It is prepared by boiling urea with Molasses in the ratio of 1: 3 for 30 minutes. It contains 36% DCP and 70% TDN .
4. UMMB - UMMB stands for Urea Molasses Mineral Block . UMMB is a method for slow releasing urea , which checks the proper amount of urea given per day . In this method the urea is fed in the form of licks to the cattle .

# Precaution of urea feeding:

---

- Never feed to young animals below 6 months of age.
- Provide sufficient drinking water .
- Provide sufficient amount of soluble carbohydrate for efficient utilization of urea (Ex. Molasses).



Reference – Principles of Animal Nutrition & feed Technology by DV Reddy  
- [http:// ruminantnutrition.com](http://ruminantnutrition.com)

---



**Thank You!**