DEPARTMENT OF ANIMAL NUTRITION

- TOPIC – RECENT ADVANCES IN POULTRY FEED ADDITIVES.

FEED ADDITIVES – Are an additive of extra nutrient /non nutrient /drug for the livestock & poultry required for the growth & productivity.

Feed additives may be –

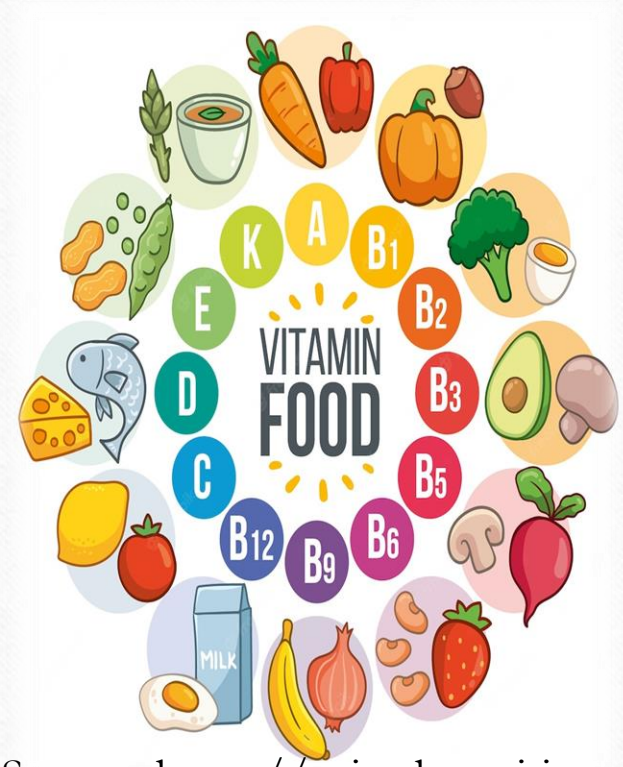
1 Nutritional	2 Non Nutritional	3 Miscellaneous
• Vitamins	- Enzymes	-Plant /Herbal products
• Amino Acids	- Probiotics	- Antioxidants
• Fatty Acids		- Flavouring Agents
• Minerals		- Emulsifiers
• Prebiotics		- Pellet Binders
• Buffers		- Adsorbents

1.NUTRITIONAL FEED ADDITIVES-

- Vitamins -

1. Water soluble vitamins — Vit. B complex, Vit . C
   - Dietary required
2. Fat soluble vitamins — Vit A, D, E, K
   - Can be synthesized & stored in body so req. in less amount.

- Vit B12 @ 3mg , Choline @ 500 gm , Vit E @ 100 - 5000 IU /1000 kg feed. To prevent from various infections & full fill the nutrient requirements.



Source- https://avitechnutrition.com

- ✓ Amino Acids - 10 Essential + 1 Additionally Essential.

  These are – Methionine , Threonine , Cysteine , Arginine , Glutamine ,Lysine ,
  Tryptophan , Isoleucine , Histidine , Valine , Glycine.

  - Diet should contain 12 to 15 % Protein to obtain optimum hatchability.

  - Amino acids play a key role in growth phase of poultry .

  - Zn – methionine suspension @ 150 mg / kg feed to prevent from FPD .

Fatty Acids – Building blocks of the fat in body .

Fatty acids	Sources	Why essential in diet
1.Cyclopropenoid FAs-[Sterculic Acid & Malvalic acid]	Cotton seed oil	Salmon coloration of the yolk
2.. Palmitic Acid	Palm oil [Fat = 45 %]	
3. Linolenic Acid		Normal hatchability of eggs
4.Polyunsaturated Fatty Acids	Fish oils	Normal growth & maintenance of Epithelial cells.

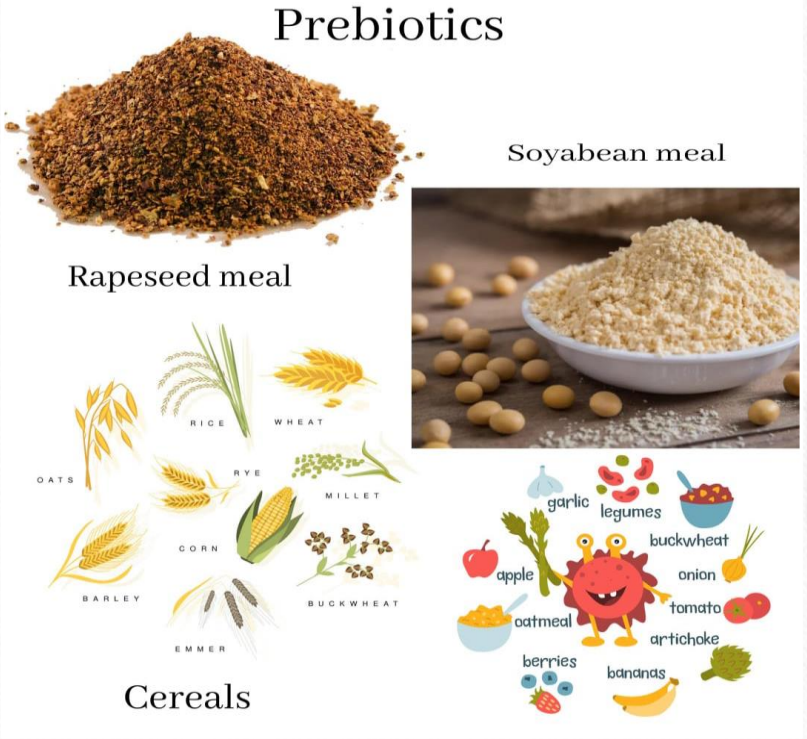
. . . . . .

- Minerals – Essential for the development of embryo
- Deficiency of minerals like Ca, P, Mn, , Zn , Mg, Fe , Cu , I , Md --- Embryonic mortality & severe abnormalities .
- Ca @ 1 - 3.3% . Cuso4 @ 50 gm / 1000 kg feed . Zn – met. @ 150 mg / kg .

- Eubiotics – Non Antibiotic products
- ✓ - Maintain good microorganisms in digestive tract.
- ✓ Eubiotic products are 1. Direct acting gut flora modulators Exmp. a] Organic acids and b] Essential oil components .
- ✓ 2. immune modulators a] Nucleotides, b] Igs
- ✓ 3. Prebiotics / Oligosaccharides
- ✓ 4. Probiotics

- **Prebiotics/Oligosaccharides** – Those feed ingredients that promotes the growth of beneficial microorganism in the intestine.

Source	Oligosaccharides
▪ Soyabean meal , rapeseed meal , legumes	Alfagalacto ogs. [GOS]
Milk Products	Transgalacto ogs. [TOS]
Cereals	Fructo ogs. [FOS]



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- **Buffers** – weak acid + their conjugate base
  - ✓ Resist changes in pH upon addition of acid or base .
  - ✓ Example – NaHco3 + Mgo ……..2/3 part + 1 part

NON NUTRITIONAL FEED ADDITIVES -

- Enzymes – Fibrinolytic Enzymes
  - ✓ 1.Cellulase – for the breakdown of cellulose.
  - ✓ 2. Phytase – Degradation of dietary phytate
  - ✓ 3. Xylanase – Degradation of non starch polysaccharide Arabinoxylan .

- Probiotics – Probiotics are direct fed microbial feed supplements which modulate the gut microflora by successfully competing with pathogens through a competitive exclusion process.
  - ✓ Improve the intestinal microbial balance.
  - ✓ Examples – Bifidobacterium , Lactococcus , Lactobacillus , Streptococcus , Yeast candida .

MISCELLINIOUS FEED ADDITIVES -

- Antioxidants – Chemical compounds which have the capacity of preventing oxidation of substance by taking up oxy.
- ✓ Example – Natural antioxidant . Vit C & E & Lutein.
- ✓ Synthetic Butylated hydroxyl anisole[BHA]
- ✓ [BHT] .

@ 125 -200 gm/ tonne of feed.

- Flavouring Agents – Enhance palatability of feeds .
- ✓ Example – Xanthophylls in yellow maize & Lucerne meals …used to produce deep yellow pigmentation in body & egg yolk.
- ✓ @ 11 to 66 mg / kg feed.

Cont.

- Emulsifiers – Phospholipids ,
  - ✓ lecithin , Lysolecithin.
  - ✓ Increase growth performance & improve fatty acid digestibility in Broilers.
- Pellet Binders – Starch , Molasses, various lignin & hemicellulose products , Na bentonite .
- Adsorbents – Compounds that are not absorbed from the GIT , having ability to bind with toxic substances & preventing their absorption,
- Mainly used for the treatment of acute poisoning
  - ✓ Examples – Al –silicates , Bentonite , zeolites .

Role Of Feed Additives

https://avitechnutrition.com

Reference – Applied Nutrition by DV Reddy 3rd Edition
- https://avitechnutrition.com