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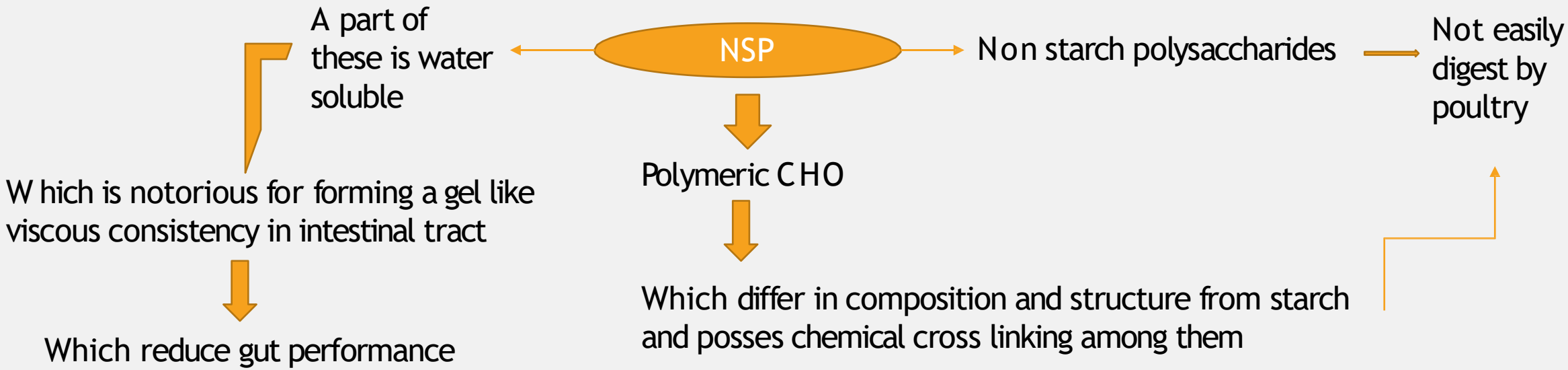
EXOGENOUS ENZYMES OF POULTRY NUTRITION

EXOGENOUS ENZYMES

The enzymes added to animals feed to produce desirable effect are referred as exogenous enzymes.

WHY IT'S REQUIRED IN POULTRY NUTRITION



Water soluble and viscous arabinoxylans belongs to pentosans group which leads to increase water intake by birds

Cause sticky and wet droppings problem

BENEFITS OF ENZYMES

- To make diet formulation more flexible
- To reduce production cost
- To decrease digesta viscosity
- To enhance nutrients digestion
- To improve apparent ME of diet
- To increase feed intake & wt. gain

EXOGENOUS ENZYMES USED IN POULTRY FEEDS

ENZYMES	SUBSTRATE
$\beta - glucanases$	Barley oats
Xylanases	Wheat, rye, triticale rice bran
$\beta - galactosidases$	Grain legumes lupin
Phytases	Plant feed stuffs
Proteases	Proteins
Lipases	Lipids
Amylases	Starch

(Khattak *et al.*, 2006)

MODE OF ACTION

- **Two Main functions** :-

  - ❖ Cell wall destruction
  - ❖ Stimulation of beneficial bacteria

FUNCTIONS OF DIFFERENT ENZYMES

Xylanases :-

- Break down the soluble fibre [Xylose] and opens up feed stuff cell walls
- Break insoluble fibre in to smaller particle resulting in increased lower gut fermentation
- Reduces gut viscosity and wet litter
- Releases some energy and small amount of protein

Phytases :-

- Release phosphorus which is stored in phytate
- Phosphorus is key nutritional requirement for bone growth in poultry

Proteases :-

- Increase protein digestibility through hydrolysis of storage and structural protein

Amylases :-

- Act on starch , increase it's hydrolysis & thereby improving it's digestibility by hydrolysis of 1,4 glucosidic linkages

Lipases :-

- Increases the fat digestibility by it's hydrolysis and thereby improving it's digestibility

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β-*glucanases* :-

- *β-glucanase hydrolyzing* 1,3 *and* 1,4 *glycosidic bond*
- It can break up *β*-glucan in barley and cereals cell wall and reduce the effect of antinutritional factor
- Improve absorption of nutrient

POULTRY ZYME-PR

Helps for better digestion and
FCR Improves Egg Production

Enzyme Feed additive

COMPOSITION :

Each 1 Kg contains
Xylanase- 50000 U
Pectinase- 40000 U
Cellulase- 20000 U
Phytase - 5000 U
Protease- 20000 U
Amylase - 20000 U
Mannanase - 10000 U
Beta Glucanase- 10000 U
Lipase- 1000 U

CONCLUSION

- Poultry don’t produce enzyme for the hydrolysis of NSP present in the cell wall of the grain so addition of exogenous enzyme specific for a given feed formulation will enhance the availability of feed component to the birds
- Exogenous enzyme increase the energy by hydrolyzing the fibrous content present in feed
- Calcium and phosphorus precipitation are prevented and absorption of them is promoted by these enzyme
- The viscosity of the bird dropping decrease
- There will be no loss of endogenous protein
- The starch in the cereals get unmasked as the cell wall breaks and the high amount of energy is produce to bird

Reference:- Khattak, F. M., Pasha, T. N., Hayat, Z. And Mahmud, A. (2006). Enzymes in poultry nutrition. *J. Anim. Pl. Sci*, *16*(1-2), 1-7.