

Protease Active

Product Information / Protease Active

Introduction:

Protease Active is a thermo stable protease enzyme obtained by using a bacillus species. In animals, amino acids are obtained through the consumption of foods containing protein. Ingested proteins are broken down through digestion, which typically involves denaturation of the protein through exposure to acid and hydrolysis by enzymes called Proteases. Some ingested amino acids are used for protein biosynthesis, while others are converted to glucose through gluconeogenesis, or fed into the citric acid cycle. This use of protein as a fuel is particularly important under starvation conditions since it allows body proteins - particularly those found in muscle - to be used to support life. Amino acids are also important dietary sources of nitrogen.

Application:

The Protease Active has unique property like, ability to increase digestibility of many different feed proteins, the ability to complement the endogenous protease enzymes, activity after exposure to low pH conditions of the gizzard and proventriculus, and stability during feed processing were all taken into account. Proteases perform a variety of roles in biology. These enzymes function in important physiological processes, including homeostasis, apoptosis, signal transduction, reproduction and immunity. In addition, proteases are involved in blood coagulation and wound healing.

From the nutrition perspective, the hydrolysis of proteins to individual amino acids and peptides in the intestinal tract is a key function for proteases. Several intestinal proteases exist, and comprise a “protease system” in the intestinal tract for the utilization of various protein sources.

Passage of hydrochloric acid, produced in the proventriculus, and peptides through the proventriculus and gizzard into the duodenum stimulates the release of the hormones secretin and pancreaticozym from the mucosa of the duodenum. These hormones promote the secretion of pancreatic juice containing a number of enzymes and bicarbonate ions. Typically, for conventional feed ingredients, amino acid digestibility averages only 80 to 90 per cent. This means 10 to 20 per cent of all ingested protein is not digested. Instead, it passes to the hind-gut where it is used by micro-organisms inhabiting the lower

<u>Ingredient</u>	<u>Lys</u>	<u>SAA</u>	<u>Thr</u>	<u>Val</u>	<u>Arg</u>	<u>Ile</u>	<u>Trp</u>	<u>Avg</u>
Corn	92	90	85	92	93	95	81	88
Sorghum	90	84	83	87	88	90	87	87
Wheat	86	91	87	90	85	94	86	88
Soybean m.	90	86	85	88	93	89	89	89
Canola m.	80	80	73	79	87	79	80	80
Cotton m.	65	73	68	74	88	71	80	74
Sunflower	87	87	82	87	93	89	87	87
Wheat m.	80	78	73	77	80	82	79	78
Rice m.	76	68	66	68	78	66	50	67
MBM	69	62	62	70	77	69	55	66
Feather m.	57	51	53	67	68	73	46	59

Figure 1 Typical broiler amino acid digestibility coefficients (per cent) for a range of conventionally used feed ingredients.

intestine for their own growth and development, before being excreted of those amino acids absorbed by the broiler, not all are required at similar levels. Rather, there is an 'ideal' amino acid profile for a particular production target. In practice, it is not possible to meet such 'ideal' amino acid profiles fully with the ingredients available. Consequently, to ensure the requirements for the most limiting amino acid are met, others must be provided in excess. As excesses of amino acids must be de-aminated and converted

to uric acid, which is an expensive process in terms of energy and animal performance, they should be minimized by supplying amino acids as closely to the ideal profile as possible. Why Protease Active ? Enzyme use in feed rations allows you to maintain a properly balanced ration without sacrificing any protein or energy levels. And, when you choose Protease Active it means 100 percent return on investment. As per our analysis, Protease Active can replace about 7 to 10 % of protein source from the formulated feed. By adding Protease Active you can be able to get same performance by feeding less. In trials, (Figure 1) adding Protease Active to lower protein diets increased broiler body weight and improved feed efficiency similar to feeding higher protein diets. Similar results were seen with egg production when laying hens were fed Protease Active .

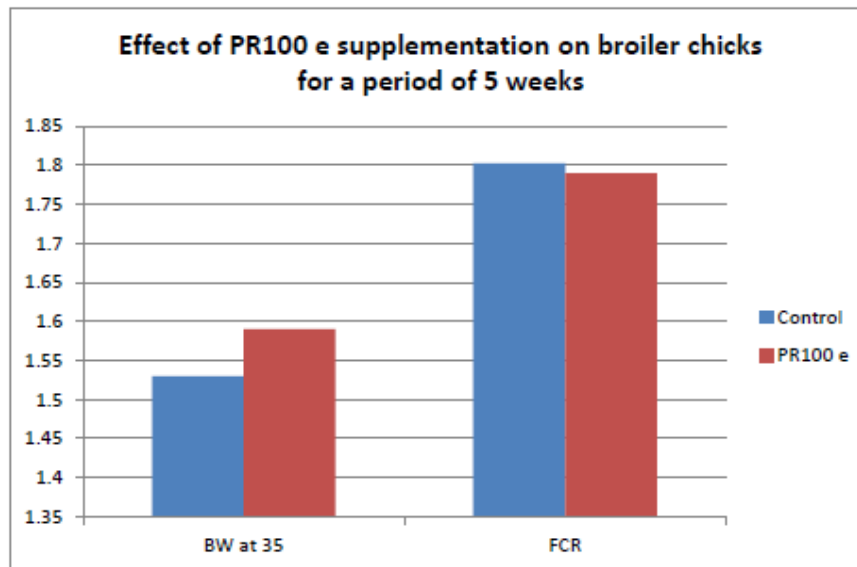


Figure 1: Effect of ArrowVet PR 100 E supplementation on broiler chicks.

Advantages with Protease Active :

1. Developed for Feed Industry

Protease Active , a unique protease specifically developed for application as a feed enzyme. In the selection process, factors such as the ability to degrade many different feed proteins; the need to complement the endogenous protease enzymes; activity after exposure to the low pH conditions of the GI tract ; and stability during feed processing were all taken into account.

2. pH Stability

One of the most important criteria for success of a protease in broilers is good stability under low pH conditions found in the bird's stomach. For a protease to work successfully, it is essential that it should complement the endogenous enzymes. The exogenous protease must work in synergy with these enzymes to obtain the optimum benefit.

3. Flexibility in Use

For a protease to be commercially useful it must be possible to use it flexibly in a diverse range of diet types. Protease Active been tested using a variety of vegetable and animal protein sources like keratin, elastin, collagen etc. It has the ability to improve the digestibility of protein from as wide a range of feed ingredients.

4. Stability

With more manufacturers aligning towards pellet feeds it is essential to have a heat stable protease. The conditioning time and temperature during the production of pellet feed becomes higher and longer to ensure compliance with increasingly stringent food and feed safety requirements

5. Economic Benefits

Protease Active provides the feed producer with a valuable tool to consistently improve the amino acid digestibility of feed ingredients. This in turn offers a range of economically attractive benefits.

6. Amino Acid Profile of Protease Active

Protease Active enhances protein digestion up to 10% and in turn facilitates protein conversion to the most bio available amino acids (as mentioned below), essential body building components for birds/mammals. Amino Acids are easily digestible and absorbed in the body.

- ☐ Lysine
- ☐ Methionine
- ☐ Cysteine
- ☐ Tryptophan
- ☐ Threonine
- ☐ Arginine

Specifications:

Minimum Activity : 9,00,000 units/g

Colour : off-white to tan powder

Odour : characteristic



Dosage:

Suggested dosage rate: 400–500g/ton of feed.

Protease Active can be used alone and can also be used in the enzyme blends as feed additives to improve feed utilization and efficiencies.

(Variation in dosage depends on enzyme being used independently or in combination with other enzymes to make feed formulations).

Packing and Storage:

Protease Active is available in standard **25kgs HDPE** drums and should be stored under recommended conditions of storage