



### Amylase Enzyme Activity - What does it mean?

Unlike the other carbohydrases, amylase is not a NSP-degrading enzyme. Additionally, unlike the NSP-degrading enzymes, amylase is produced endogenously by poultry. However, amylase activity is often included in NSP-degrading enzyme cocktails.

Amylase is responsible for breaking the  $\alpha$ -1,4 linkages between glucose molecules in starch. Amylase activity reduces starch to smaller, simple sugars, which can then pass across the absorptive epithelium of the digestive tract.

As stated earlier, poultry produce amylase endogenously in the pancreas. Thus, as amylase is produced endogenously, it would seem unnecessary to provide amylase in the diet. However, some research has demonstrated that poultry produce relatively low levels of endogenous amylase during the starter period (Noy and Sklan, 1995; Uni et al., 1995). This would indicate that there is some potential for improved starch digestibility by providing dietary amylase during the early phases of production.

Experimental research (Ritz et al., 1995; Zanella et al., 1999; Caf e et al., 2002; Gracia et al., 2003; Cowieson and Adeola, 2005; Novak et al., 2007; Rutherford et al., 2007) has demonstrated performance benefits in poultry fed diets containing amylase, whereas Mahagna et al. (1995) saw no beneficial effects. However, it is important to point out that most of these experiments utilized enzyme cocktails which expressed additional activities such as xylanase and protease. Thus, it is difficult to determine if the performance benefits were due to dietary amylase specifically.

Some research has found that feeding exogenous amylase actually impairs endogenous amylase and protease secretion in poultry (Mahagna et al., 1995). This seems to indicate that amylase supplementation could have some negative impact on starch and protein digestibility. However, based on the performance data listed above, it is difficult to determine if this is the case. Perhaps this will be better elucidated in future poultry research involving dietary amylase supplementation.