BÖLÜM

8 ENZİMLER

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GİRİŞ

Hayvansal üretim sistemlerinde yem, toplam üretim maliyetlerinin %60 ila %70'ini oluşturarak en önemli girdiler arasında yer almaktadır. Küresel gıda talebindeki artış ve doğal kaynakların sürdürülebilir kullanımı zorunluluğu, yem kaynaklarının daha verimli değerlendirilmesini gerektirmektedir. Bu bağlamda, yem verimliliğini artıracak, sindirilebilirliği yükseltecek ve hayvan performansını iyileştirecek stratejiler büyük önem kazanmıştır. Son yıllarda, hayvan besleme uygulamalarında yemlerin sindirilebilirliğini ve besin madde kullanımını artırmaya yönelik stratejiler arasında enzim takviyesi öne çıkan ve yaygınlaşan bir yaklaşım hâline gelmiştir.

Yemlere katılan enzimler, özellikle tek mideli hayvanların (kanatlılar ve domuzlar gibi) endojen olarak sindiremedikleri bazı bileşikleri sindirebilmelerine yardımcı olmaktadır. Bu enzimler, sadece yemden yararlanmayı artırmakla kalmayıp, aynı zamanda hayvan sağlığına, çevresel sürdürülebilirliğe ve ekonomik verimliliğe de katkı sağlamaktadır.

Bitkisel kaynaklı yem maddeleri, özellikle tahıl ve baklagiller, antibesinsel faktörler ve sindirilemeyen kompleks yapılar içerebilmektedir. Bu bileşenlerin başında fitat, selüloz, hemiselüloz ve diğer nişasta olmayan polisakkaritler (NOP) gelmektedir. Tek mideli hayvanlar bu bileşenleri sindirme kapasitesine sahip olmadıklarından dolayı, bu maddeler yemden alınan toplam enerji ve besin maddelerinin biyoyararlanımını sınırlar. Yem katkı maddesi olarak kullanılan enzimler, bu sınırlamaları aza indirerek veya ortadan kaldırarak yemlerin daha etkin kullanılmasını sağlar. Örneğin, fitaz enzimi ile fitat fosforunun serbest bırakılması, sadece fosforun biyoyararlanımını artırmakla kalmaz; aynı zamanda protein ve mineral emilimini de olumlu yönde etkiler. Benzer şekilde, β-glukanaz, ksilanaz, selülaz ve amilaz gibi enzimler, hücre duvarı bileşenlerini parçalayarak sindirimi kolaylaştırır, bağırsak mikrobiyotasını düzenler ve hayvan performansını artırır.

Ayrıca, enzimlerin hayvansal üretim sistemlerine katkıları yalnızca besinsel değil, aynı zamanda çevresel boyutta da değerlidir. Özellikle fitaz uygulamaları sayesinde fosforun dışkı ile atılımı azaltılmakta, bu da çevresel fosfor yükünün düşürülmesine ve ötrofikasyonun önlenmesine yardımcı olmaktadır. Bu yönüyle, enzim kullanımı hem hayvan besleme ekonomisine, hem de çevresel sürdürülebilirliğe hizmet etmektedir.

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