

AKTIVITAS ENZIM, KANDUNGAN NUTRIEN DAN KECERNAAN SECARA *IN VITRO* BUNGKIL INTI SAWIT DENGAN PENAMBAHAN ENZIM *MANNANASE* PADA PERBEDAAN LAMA SIMPAN

INTISARI

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23/531106/PPT/01346

Penggunaan bungkil inti sawit (BIS) sebagai pakan ternak terbatas karena kandungan seratnya yang tinggi didominasi fraksi β -mannan sehingga menyebabkan penurunan nilai kecernaan. Penelitian ini bertujuan mengevaluasi pengaruh suplementasi enzim *mannanase* dan lama simpan terhadap aktivitas enzim, komposisi nutrisi, dan kecernaan *in vitro* BIS pada sistem pencernaan ternak unggas dan ruminansia. Penelitian menggunakan rancangan acak lengkap faktorial dengan dua faktor: penambahan *mannanase* (0 dan 1,5 g/kg pakan) dan lama simpan (0, 30, dan 60 hari), masing-masing dengan tiga ulangan. Variabel yang diukur meliputi pH dan suhu optimum enzim, aktivitas enzim, pH BIS selama penyimpanan, kandungan nutrien, serta kecernaan nutrien secara *in vitro*. Hasil penelitian menunjukkan bahwa *mannanase* memiliki aktivitas optimum pada pH 6 dan suhu 40°C. Penambahan enzim tidak mempengaruhi nilai seluruh kandungan nutrien BIS. Penambahan enzim meningkatkan aktivitas enzim dan kecernaan bahan kering, bahan organik, serta protein kasar secara *in vitro* pada unggas. Lama simpan berpengaruh terhadap kandungan bahan kering, bahan organik, dan ekstrak eter, serta kecernaan bahan kering dan bahan organik secara *in vitro* pada ruminansia yang menurun seiring bertambahnya lama simpan. Interaksi antara suplementasi enzim dan lama simpan 30 hari meningkatkan kecernaan bahan kering dan bahan organik secara *in vitro* pada non-ruminansia. Namun, penambahan enzim dan lama simpan tidak memperbaiki kualitas BIS untuk ruminansia berdasarkan kecernaan nutrisi *in vitro*. Kesimpulannya, suplementasi *mannanase* 1,5 g/kg BIS dengan lama simpan hingga 30 hari dapat meningkatkan kecernaan bahan kering, bahan organik, protein kasar dan aktivitas enzim.

Kata kunci: Bungkil inti sawit, *in vitro*, Lama simpan, *Mannanase*, Nutrien.

ENZYME ACTIVITY, NUTRIENT CONTENT, AND IN VITRO DIGESTIBILITY OF PALM KERNEL CAKE WITH *MANNANASE* ENZYME AT DIFFERENT STORAGE DURATIONS

ABSTRACT

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The utilization of palm kernel cake (PKC) as animal feed is limited due to its high fiber content, particularly β -mannan, which reduces nutrient digestibility. This study aimed to evaluate the effect of *mannanase* enzyme supplementation and storage duration on enzyme activity, nutrient composition, and in vitro digestibility of PKC in poultry and ruminant digestive systems. A factorial completely randomized design was used with two factors: *mannanase* supplementation (0 and 1.5 g/kg feed) and storage duration (0, 30, and 60 days), each with three replications. The measured variables included optimal pH and temperature of the enzyme, enzyme activity, PKC pH during storage, nutrient content, and in vitro nutrient digestibility. The results showed that *mannanase* had optimal activity at pH 6 and 40°C. Enzyme supplementation increased enzyme activity and in vitro dry matter, organic matter, and crude protein digestibility in poultry. Storage duration affected dry matter, organic matter, and ether extract contents, as well as in vitro dry matter and organic matter digestibility in ruminants, which decreased with longer storage. The interaction between enzyme supplementation and 30-day storage increased in vitro dry matter and organic matter digestibility in poultry. However, enzyme supplementation and storage duration did not improve the quality of PKC for ruminants based on in vitro nutrient digestibility. In conclusion, supplementing 1.5 g *mannanase* per kg PKC with storage up to 30 days can increase dry matter, organic matter digestibility, and enzyme activity, making it suitable for poultry feed.

Keyword: Palm kernel cake, In vitro, Storage duration, *Mannanase*, Nutrients