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Effects of a direct-fed microbial to Bali steers fed oil palm trunk fermented as base diet

Yetti Marlida, Mardiati Zain and **Fauzia Agustein**
Andalas University, Indonesia

This research aims to determine effect of a direct-fed microbial (DFM) on digestibility (dry matter (DM) , organic matter (OM) and crude protein (CP)) and growth performances such as feed intake, body weight gain and feed efficiency of Bali steer fed oil palm trunk fermented as base diet with the addition of (DFM) of *Saccharomyces cerevicea* and *Pediococcus* sp. The experimental design used was a randomized block design consisted of 4 treatments and 4 replicates using 16 Bali steers with an average weight between 120-150 kg per head. Feed treatment applied as follows: A: 70% concentrate+30% fermented oil palm trunk; B: Ration A+1% *Saccharomyces cerevicea*; C: Ration A+1% *Pediococcus* sp; D: Ration A+0.5% *Saccharomyces cerevicea*+0.5% *Pedicococus* sp. The results showed that the treatment provides highly significant effect ($P<0.01$) on the digestibility of DM, OM CP, feed intake and body weight gain, whereas a significantly effects ($P<0.05$) to feed efficiency. It can be concluded that the best treatment was the used of ration D with digestibility DM, OM and CP were 70.42%; 73.04% and 69.27% respectively. The ration D also showed that the body weight gain: 1.0 kg/day with feed intake: 4.31 kg and 23.13% feed efficiency.

yetti_marlida@faterna.unand.ac.id

The functional ecology and mechanical properties of biological hooks in nature

Bruce Edward Saunders
University of Bath, UK

The selection of biological hooks in nature is wide so how do we endeavor to narrow the field into a manageable set that can be analyzed and commercialized such that they all have a natural product that is reproducible and of value to the human population? We turn to the ancient evolutionary theory of cladistics which makes use of a simple measure to differentiate between organisms, the visual structures that differentiate and also consolidate them into sets. Nachtigal supplies us with a textbook of classes of attachment mechanisms which yield a number on instances where the connectors resemble those of man-made devices, from ratchets to hinges, but always in two structures and never with an intervening third which is separate from the two such as the rod of a hinge on a door. It is important to consider the use of available technology, to look at these examples with new eyes as are made available by new microscopy techniques, computer integration and new layered manufacture techniques such as SEM (Scanning electro-deposition Electron Microscopy) and bio-printing. The end result has been the simplest of all attachment devices seen to be possible and inevitably the first option when looking at commercial applications. Advances in biomaterials too mean that we can look at more options with greater versatility from fusing bone with attachment devices treated with hydroxyapatite to anchorage devices for the sensitive walls of the gut and/or the abdomen as well as brain implants for sensing magnetic fields. It is hoped that the reader will enjoy this work as much as I have with the great promise that it will hold forth the right of way for the advance of technology and the sustenance of the age which is about to come.

brucesaunders23@hotmail.co.uk