

## FEED EVALUATION OF HEAT, CHEMICALLY OR BIOLOGICALLY TREATED *Jatropha curcas* MEAL AS NON TRADITIONAL FEED.

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### ABSTRACT

A study was conducted to determine the effect of treating *Jatropha curcas* meal with heat (JMH), biologically with lactobacillus bacteria (JMB), or chemically with isopropanol (JMI) on its anti-nutritive compounds in order to induce *Jatropha curcas* meal in ruminants feeds to replace part of the costly imported soybean meal. *In situ* trial was also conducted to evaluate degradability of dry matter (DM), organic matter (OM) and crude protein (CP) in the rumen of two castrated male buffaloes fed rice straw and concentrate feed mixture. The experimental concentrate feed mixture (CFM), contained soybean meal to be replaced with untreated *Jatropha* meal (JMU) by 0%, JMU (CFM<sup>0</sup>), 25% JMU (CFM<sup>1</sup>), 50% JMU (CFM<sup>2</sup>) and 75% JMU (CFM<sup>3</sup>), or heated *Jatropha* meal (JMH) 25% (CFM<sup>4</sup>), 50% JMH (CFM<sup>5</sup>) and 75% (CFM<sup>6</sup>) or chemical *Jatropha* meal (JMI) 25% (CFM<sup>7</sup>), 50% JMI (CFM<sup>8</sup>) and 75% (CFM<sup>9</sup>), or biological *Jatropha* meal (JMB) 25% (CFM<sup>10</sup>), 50% JMI (CFM<sup>11</sup>) and 75% JMB (CFM<sup>12</sup>) of Soybean meal. Treatment JM with bacteria increased both CP and ash content, while CF content was decreased. Meantime, treatment *Jatropha* meal with heat (JMH) decreased CP. Other treatments had almost similar CF content. All treatments, showed a positive effect in decreasing concentration of anti-nutritive compounds. The biological treatment with bacteria resulted in the highest decrease of anti-nutritive compounds. Meanwhile heat treatment had the least effect in decreasing anti-nutritive compounds. Rations with bacteria treated JCM had highest DM and OM degradability values, as compared with other treatments. On the other hand, rations with isopropanol treated JMI, had highest CP degradability. Effective degradability ED (%) of DM and OM were highest for ration contained bacteria treated JMB. While, no significant differences were detected among rations for EDCP.

Under the conditions of the present experiment, it could be concluded that the bacterial treated JMB could replace up to 75% of the soybean meal in the CFM. However, including *Jatropha* meal (JM) in ruminant rations still needs more investigation to study its effect on animal performance and its residual effect in milk and meat.

**Keywords:** *Jatropha curcas* meal, biological treatment, chemical treatment, heat treatment, antinutritional factors and *in situ* degradability.

### INTRODUCTION

In Egypt there is a problem of shortage of protein sources used for animal feed, which is caused by the expensive imported soybean meal. Therefore, there is a need to evaluate alternative protein sources to alleviate the shortage problem. *Jatropha curcas* is a tropical plant (a shrub or small tree) which can be set up on eroded lands under harsh climatic conditions (Munch and Kiefer 1989). The seed which weighs about 0.75g contains 30-32% protein and 60-66% lipid (Liberalino *et al.*, 1988), indicating good nutritional value. The meal remaining after oil extraction contains high protein