

EVALUATION OF SUGAR BEET PULP TREATED WITH TRICODERMA REESI AND SACCHAROMYCES CERVICIA

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ABSTRACT

Sugar beet pulp (SBP) was treated with *Trichoderma verdi* and *Saccharomyces cervicia*, or with the mineral solution without the fungus or yeast (blank), by solid-state fermentation (SSF) technique. Crude protein (CP) and ash contents increased in treated sugar beet pulp without or with fungal treatment compared to the untreated material by (70.28 and 55.17%) and (72.99 and 105.315%), respectively. However, OM, CF, EE and NFE decreased in the SBP treated without or with fungal as compared to the untreated material. The value of NPN was highly elevated in the treated SBP compared to the untreated one. Insoluble and soluble protein in sodium chloride or pepsin as percentage of CP increased without or with fungal treatment.

No significant ($P > 0.05$) differences were detected at the different incubation times for in-situ DM, OM and CP disappearance or the fitted values between treated and untreated SBP. The intercept values at zero time (a), potentially degradable fraction (b), rate of degradation of b (c) for DM, OM and CP degradability were insignificantly ($P > 0.05$) different for both treated or untreated SBP.

In two digestibility and nitrogen balance trials the first group received a ration containing concentrate feed mixture (CFM), untreated SBP (USBP) and rice straw (RS) and the second group received a ration containing CFM, treated SBP (TSBP) and RS. Untreated or treated SBP were mashed and rice straw was chopped. A second digestibility trial was carried out to overcome the problems of the first. One group received CFM and TSBP in mash form with RS, while the second group received a ration containing CFM and TSBP mixed in pelleted form plus RS.

Feeding treated SBP significantly ($P < 0.05$) lowered feed consumption from CFM, treated SBP (TSBP) and rice straw (RS) than from untreated one. Digestion coefficients of DM, OM, CF and NFE in the first digestibility trials were significantly ($P < 0.05$) lower with treated SBP than that untreated, while EE digestibility was increased. In the second trial, digestibilities of DM, OM, CP, CF, EE and NFE were significantly ($P < 0.05$) increased with TSBP in the pelleted form as compared to the mash form. Comparing the two experimental stages, the results showed no significant ($P > 0.05$) differences between untreated SBP and TSBP in pelleted form. The values of TDN were significantly ($P < 0.05$) decreased with feeding treated SBP compared to untreated one, while treated SBP in pelleted form was significantly ($P < 0.05$) higher than that of mash form. Pelleted TSBP was significantly ($P < 0.05$) higher DCP values compared to mash form and untreated SBP.

Mehrez, et al., 2008

The values of ruminal fluid pH were significantly ($P < 0.05$) lower when treated SBP was fed as compared to untreated one in the first digestibility trial, while in the second digestibility trial treated SBP in the pelleted form significantly ($P < 0.05$) decreased rumen pH values more than the mash form. No significant ($P > 0.05$) differences were found in both $\text{NH}_3\text{-N}$ and TVFA's concentrations, neither between treated and untreated SBP, nor between the pelleted and mash forms.

Blood plasma total protein, albumin and globulin were increased with the feeding of treated SBP as compared to the untreated one in the first digestibility trial, whereas in the second digestibility trial these values increased with the pelleted form of SBP more than those of the mash form. No significant differences were found for urea-N, AST and ALT with feeding treated or untreated SBP or between pelleted and mash forms.

It could be concluded from this study that, feeding untreated sugar beet pulp in rations for ruminants were the best in terms of total digestible nutrients, feed intake and rumen environmental conditions of the present study.

Key Words: Sugarbeet pulp, digestibility, fungal treatment, *Tricoderma Verdi*, *Saccharomyces cervicia*