

## EFFECT OF RUMEN PROTECTED CHOLINE SUPPLEMENTATION ON PRODUCTIVE PERFORMANCE OF DAIRY COWS

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Nine Holstein lactating cows with average live body weight ( $550 \pm 50$ ) kg, at 1<sup>st</sup> and 3<sup>rd</sup> seasons of lactation, were chosen and randomly divided into three similar groups (three cows each) were used in a lactation study during 12 weeks (for 4-week pre-partum to 8 weeks postpartum) to investigate the potential effect of feeding two different levels of rumen protected choline (RPC) 40 and 50 grams RPC /cow /day or neither supplements (control) on dairy cows productive performance. Results showed insignificant differences ( $P > 0.05$ ) between groups in the digestibility coefficients of DM, OM, CF, EE and NFE, and also in nutritive value as TDN %, while RPC groups were significantly ( $P < 0.05$ ) higher in CP digestibility coefficient and nutritive value as DCP% compared with the control. The groups of 50 and 40 gm RPC recorded higher yield of fat corrected milk (4%) accounted by 23.7% and 12% than control, respectively. Insignificance ( $P > 0.05$ ) differences were observed between the groups in the average daily DM and TDN intake while results of DCP intake were ( $P < 0.05$ ) significantly higher in favor of groups fed RPC. Group fed 50 gm RPC recorded significantly ( $P < 0.05$ ) the best feed conversion for DM, TDN and DCP compared with control. No significant difference ( $P > 0.05$ ) were observed in the change of body weight along the experimental period among the groups. However RPC groups achieved lower weight losses compared with the control. Insignificant ( $P > 0.05$ ) differences were found among the groups in the content of milk protein, fat, SNF, TS and lactose. No significant differences ( $P > 0.05$ ) were found between groups in AST, ALT and cholesterol contents, while RPC groups recorded significant ( $P < 0.05$ ) low values of triglycerides and LDL and significantly ( $P < 0.05$ ) higher values of HDL compared with the control. The groups of 50 and 40 gm RPC recorded lower feed cost for production of 1 kg milk being 2.93, 3.21 and 3.51 LE and increase in the daily net milk revenue being 42.88, 33.68 and 25.23 LE and economic feed efficiency being 70.39, 55.56 and 42.46% and relative economic efficiency % being 165.77, 130.85 and 100% compared with the control respectively. It could be concluded that RPC supplementation at 40 or 50 g/head/day to lactating Holstein cows improved digestibility, milk yield and composition, feed conversion, and economic efficiency.

***Keywords: rumen, feed conversion, economic efficiency, choline, milk yield***