

Effect of dietary supplementation with bovine derived *Bifidobacterium longum* spp. *longum* and resistant potato starch on the health and growth of neonatal calves

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Probiotics have been reported to improve health, but the studies are controversial due to the lack of host-specific products and limited understanding of their mode of action. This study assessed the impact of supplementation of probiotics, prebiotics and synbiotics on growth performance, the incidence of diarrhea and lung health when calves were fed a sub-optimal amount of colostrum. Forty-five newborn calves were randomly allocated to five treatment groups (n=9) for a 5-week period: four groups received 25% of the recommended dose of commercial colostrum replacer (1L), while one group received the recommended amount (4L). The group receiving the 4L of colostrum (PC) and one group receiving 1L of colostrum received a placebo (NC), and the other three groups received either a cocktail consisting of four strains of bovine-derived *Bifidobacterium longum* spp. *longum* strains B3, B5, B8, B15 (isolated from rectal and colonic contents of neonatal calves) (10e9 CFU/day) (PRO), resistant potato starch (80g/day) (PRE), or both bifidobacterial strains (10e9 CFU/day) and resistant potato starch (80g/day) (SYN) from day 2 to 14 post-partum. Initial (day 1) and final body weights (day 35) were recorded for the calculation of average daily gain (ADG). Lung lesion scores at day 35 were obtained by visual inspection of lung tissue. There was no significant difference in ADG (P=0.65), the incidence of diarrhea (P=0.46) among the five groups. The tendency of 86.6% and 87.2% of lower likelihood of developing lung lesions compared to NC was observed in PRO (P=0.06) and PRE (P=0.06), respectively.

Take home message: The lung lesion scores showed evidence that pre- and probiotics benefit lung health, and further investigation is needed to explore their efficacy at the doses when neonatal calves receive a sub-optimal quantity of colostrum.