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### **Research paper (5)**

<b>Title</b>	<b>Influence of Replacing Soybean Meal with Nigella sativa Seed Meal on Feed Intake, Digestibility, Growth Performance, Blood Metabolites, and Antioxidant Activity of Growing Lambs.</b>
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### **ABSTRACT**

The present experiment aimed to evaluate the partial or complete substitution of soybean meal (SBM) with Nigella sativa seed meal (NSM) on chemical composition, in vitro ruminal fermentation, and the growth performance and economic efficiency of growing lambs. Thirty-two male Ossimi lambs weighing  $41 \pm 0.4$  kg at  $195 \pm 5$  d were divided randomly into four experimental groups of eight lambs each. Lambs were fed four diets containing 40% berseem clover and 60% concentrate feed mixture. Soybean meal was replaced with NSM at 0% (NSM0; control), 50% (NSM50), 75% (NSM75), or 100% (NSM100). The experiment lasted for 105 d, consisting of 15 d for adaptation and 90 days for measurements. Higher concentrations of crude protein (CP) and nonstructural carbohydrates were



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observed with SBM; however, NSM contained more fibers and gross energy. Moreover, SBM contained higher concentrations of individual amino acids and lower concentrations of polyphenols. The replacement did not affect in vitro gas production and decreased ( $p < 0.05$ ) methane production and CP degradability. Treatments did not affect feed intake, nutrient digestibility, and diet's nutritive value measured as starch value, total digestible nutrient, digestible energy, and apparent digestible crude protein. The NSM50 and NSM75 treatments increased ( $p < 0.001$ ) total weight gain and daily gain compared to the control treatment, with lower feed conversion values associated with the NSM75 treatment. Treatments decreased cholesterol ( $p = 0.028$ ) and high-density lipoprotein ( $p = 0.029$ ) and increased antioxidant activity. Higher economic efficiencies were observed with the NSM75 followed by NSM50 and then NSM100 treatments. It is concluded that replacing 75% of SBM with NSM enhanced feed conversion and economic efficiency.

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