

# Energy balance and biological response of dairy goats fed pomegranate seed pulp and soybean oil

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**Abstract:** The objective of this research was to investigate the effects of supplementing two feedstuffs, pomegranate seed pulp (PSP) as a source of plant secondary compounds and hydrolysable tannins or soybean oil (SO) as an energy source on energy balance, blood biochemical profile and endocrine change of Saanen goats. Eight lactating cross-bred dairy goats were assigned to receive diets in a replicated 4 × 4 Latin square design with 4 periods of 14 d adaptation and 7 d of data and sample collection. The four dietary treatments were (CON) no supplementation, supplementation with pomegranate seed pulp (PSP) at 120 g/Kg DM, supplementation with soybean oil (SO) at 50 g/Kg DM, and supplementation with SO at 50 g/Kg DM and PSP at 120 g/Kg DM (PSPSO), of total dry matter intake. Energy balance of the goats did not differ significantly ( $P>0.05$ ) among different dietary treatments, but body energy balance of the SO or PSPSO goats tended to increase ( $P\leq 0.10$ ) and would better for improving energy balance of the animals. Blood metabolic response of experimental diets, such as glucose, cholesterol, triglyceride, non-esterified fatty acid (NEFA),  $\beta$ -hydroxybutyrate (BHBA) and insulin profile did not change statistically ( $P>0.05$ ) among different dietary treatments. High-fat diets (SO and PSPSO), however, tended to increase ( $P\leq 0.10$ ) glucose, cholesterol, BHBA and insulin and tended to decrease ( $P\leq 0.10$ ) triglyceride and NEFA which resulted in an improved blood metabolite for the SO and PSPSO goats. In conclusion, showed a trend of improved energy balance and blood biological response of goats fed the pomegranate by-product and soybean oil.

**Keywords:** Biological response; Energy balance; Goat; Pomegranate seed pulp; Soybean oil



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