

which in turn helps sustain intake and productivity in hot climates (Gadzama et al., 2025). In contrast, fully confined “barn” systems with high stocking density and limited movement have been associated with weight loss, elevated stress indicators, and higher parasitic egg counts, indicating that poorly designed intensive housing can impair growth despite controlled feeding.

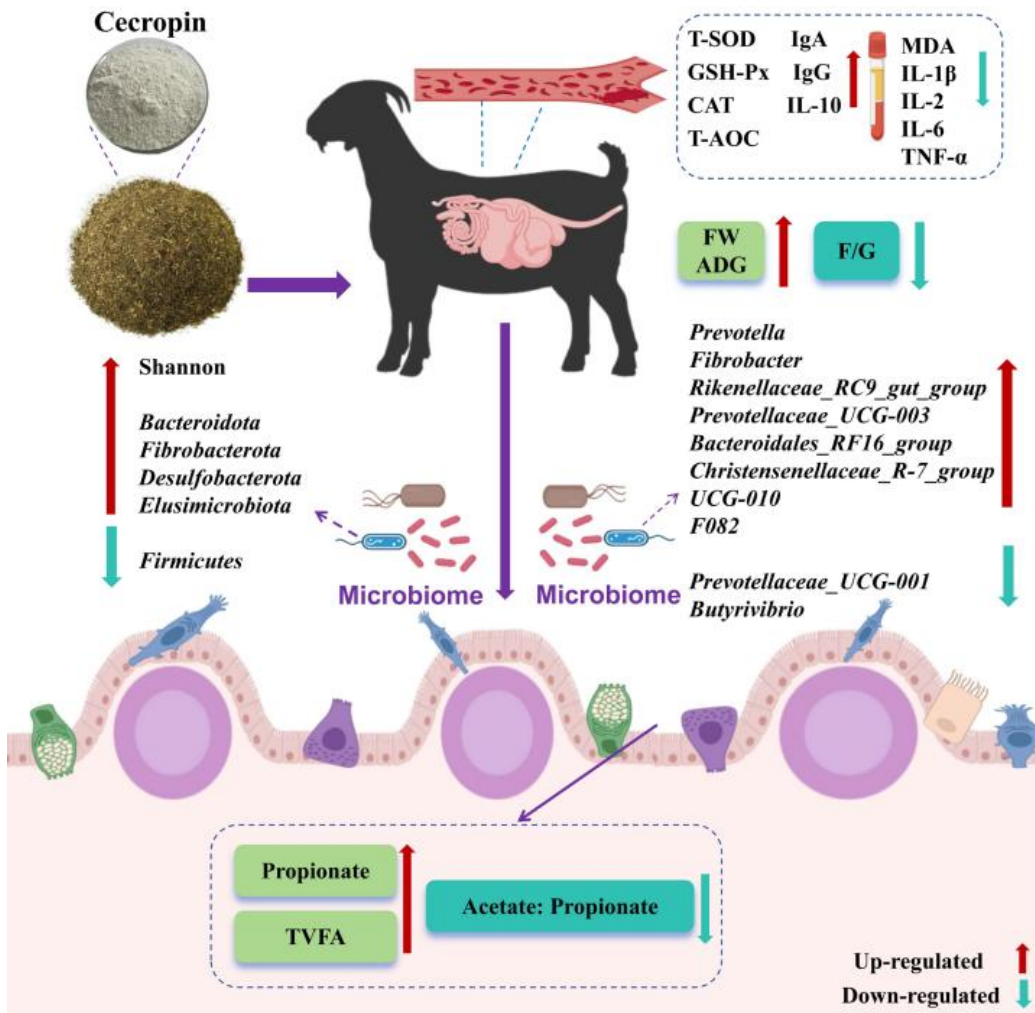


Figure 3 Mechanisms of the impact of dietary cecropin on the health of goats. T-SOD, total superoxide dismutase; GSH-Px, glutathione peroxidase; CAT, catalase; T-AOC, total antioxidant capacity; IgA, immunoglobulin A; IgG, immunoglobulin G; IL-10, interleukin-10; MDA, malondialdehyde; IL-1 β , interleukin-1 beta; IL-2, interleukin-2; IL-6, interleukin-6; TNF- α , tumor necrosis factor-alpha; FW, final body weight; ADG, average daily gain; F/G, feed-to-gain ratio; TVFA, total volatile fatty acid (Adopted from Zhou et al., 2023)

Ventilation management is equally critical for maintaining both temperature-humidity balance and air quality. A review of the relationship between thermal environment and energy metabolism in goats emphasizes that, once ambient conditions exceed adaptive thresholds, respiratory frequency, evaporative heat loss, and rectal temperature rise sharply, underscoring the need for designs that promote airflow and heat dissipation (Lima et al., 2022). Monitoring temperature and humidity in real time, and adjusting wall openings or mechanical ventilation accordingly, allows farmers to keep THI below levels that trigger declines in metabolic behaviors and disruptions in endocrine status (Zhou et al., 2023). In dairy goat barns, Internet-of-Things monitoring of gases showed that building structure and the management of openings, together with litter replacement frequency, significantly affect concentrations of ammonia and carbon dioxide, and low winter THI even raised concerns about cold stress when openings were over-managed (Celozzi et al., 2025). These findings suggest that housing design and ventilation should be tuned seasonally to avoid both heat and cold stress, ensuring that feed resources are converted efficiently into growth.