

## Simple summary

The research focused on how fenugreek seeds affect the immune system and gut bacteria in broiler chickens. Fenugreek seed powder was added to the diets of chickens in varying amounts across three groups. The findings indicated that fenugreek seeds led to a downregulation of genes associated with inflammation and antimicrobial defense, implying a reduction in inflammation and an enhanced immune response. Additionally, the gut bacteria composition in the chickens changed, with an increase in beneficial bacteria and a decrease in harmful bacteria. This suggests that fenugreek seeds positively influence both the immune response and gut microbiota in broiler chickens, potentially offering health benefits to poultry.

## Expected impacts and suggestions

1. **Immune System Modulation:** Fenugreek seeds can downregulate genes associated with inflammation and antimicrobial defense, indicating a potential reduction in inflammation and enhancement of the immune response.
2. **Gut Microbiota Alteration:** The inclusion of fenugreek seeds in the diet alters the gut microbiota, increasing beneficial bacteria and reducing harmful ones.
3. **General Health and Wellbeing:** The modulation of immune responses and improvement in gut microbiota could lead to overall better health and well-being of the broiler chickens.
4. **Dietary Inclusion Recommendations:** It may be beneficial to consider including fenugreek seeds in broiler diets and conducting further research to optimize the dosage for maximum benefits.
5. **Potential for Reduced Antibiotic Use:** With improved immunity and gut health, there might be a reduced need for antibiotics in poultry farming.
6. **Further Research:** Continued research is suggested to fully understand the impact of fenugreek seeds on broiler chickens, especially under varying farming conditions.