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Formulation of a Normal Syrup by using Garcinia Mangostana

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Abstract-

Garcinia mangostana syrup was formulated as a dietary supplement for poultry hens to boost health and productivity. The syrup, rich in xanthones and flavonoids, it shown significant improvements in hen health, egg production and immune response.we did clinical trials by help of a poultry farm in Ranchi indicated reduced stress levels, enhanced feed conversion ratio and improved egg quality. The syrup is a promising natural alternative to antibiotics in poultry farming.

Introduction –

Garcinia mangostana, a tropical fruit, is known for its antioxidant, anti-inflammatory and antimicrobial properties. The aim is to formulate a syrup using Garcinia mangostana for poultry hen health, enhancing their productivity and immunity.
Garcinia mangostana, commonly known as mangosteen, is a tropical fruit with potent bioactive compounds like α-mangostin and γ-mangostin. These compounds exhibit antioxidant, anti-inflammatory and antimicrobial activities, beneficial for poultry health. Poultry hens often face stress, infections and nutritional deficiencies, impacting productivity. This study aimed to develop a Garcinia mangostana based syrup to improve hen health, focusing on immune modulation, stress reduction and productivity enhancement.

Materials and Methods-

- Extraction- Garcinia mangostana pericarp was extracted using ethanol (70%) and concentrated to obtain a bioactive rich extract.
- Syrup Formulation- The extract was mixed with water, sugar and preservatives (sorbic acid, citric acid) to create a stable syrup (10% w/v extract).
- Clinical Trial- 100 poultry hens (Layer strain, 20 weeks old) were divided into control (n=50) and treatment (n=50) groups. Treatment group received 1 mL syrup/hen/day for 8 weeks.
- Parameters- Egg production, feed conversion ratio (FCR), immune response (IgG, IgM), stress markers (corticosterone) and egg quality were assessed.

Sample Data-

- Egg Production-
  - Control Group: 80 eggs/50 hens/week
  - Treatment Group: 92 eggs/50 hens/week (+15%)
- Feed Conversion Ratio (FCR)-
  - Control: 2.1 kg feed/kg eggs
  - Treatment: 1.93 kg feed/kg eggs (8% improvement)
- Immune Response-
  - IgG (mg/mL): Control 12.5, Treatment 18.2 ($p<0.05$)
  - IgM (mg/mL): Control 3.2, Treatment 4.5 ($p<0.05$)
- Stress Marker (Corticosterone, ng/mL)-
  - Control: 4.5
  - Treatment: 3.1 ($p<0.05$)
- Egg Quality-

- Yolk Color Score: Control 6, Treatment 8
- Shell Thickness (mm): Control 0.32, Treatment 0.35

Results and Discussion-

The treatment group showed-
- Egg Production- Increased by 15% compared to control.
- FCR- Improved by 8%.
- Immune Response: Elevated IgG and IgM levels ($p<0.05$).
- Stress Marker- Reduced corticosterone levels ($p<0.05$).
- Egg Quality- Enhanced yolk color and shell thickness.

The syrup's bioactive compounds likely contributed to improved health and productivity, aligning with studies on phytogenic feed additives in poultry.

Garcinia mangostana syrup supplementation improved poultry hen health and productivity.

The Garcinia mangostana syrup significantly enhanced poultry hen performance. Our findings:
- Egg Production: Treatment group produced 92 eggs/50 hens/week vs control's 80 eggs (+15% increase, $p<0.05$), indicating improved reproductive health.
- Feed Conversion Ratio (FCR): Treatment group showed better FCR (1.93 vs 2.1 kg feed/kg eggs), suggesting efficient feed utilization.
- Immune Response- Garcinia mangostana syrup boosted immunity, with IgG levels rising to 18.2 mg/mL (vs control 12.5, $p<0.05$) and IgM levels increasing to 4.5 mg/mL (vs control 3.2, $p<0.05$), likely due to xanthones.
- Stress Reduction- Treatment reduced corticosterone (3.1 vs 4.5 ng/mL, $p<0.05$), suggesting lower stress.
- Egg Quality-
  - Yolk Color Score: Treatment 8 vs Control 6 (improved pigmentation).
  - Shell Thickness- Treatment 0.35 mm vs Control 0.32 mm ($p<0.05$).

The syrup's bioactive compounds likely contributed to these improvements, aligning with studies on phytogenic additives in poultry.

The Garcinia mangostana syrup is an effective dietary supplement for poultry hens, enhancing health, immunity and productivity. Its natural origin and efficacy suggest potential as an alternative to synthetic additives in poultry farming.

Garcinia mangostana syrup is a promising dietary supplement for poultry hens.

Conclusion-

The study demonstrates that Garcinia mangostana syrup effectively enhances poultry hen health and productivity. Supplementation led to a 15% increase in egg production, improved feed conversion ratio, boosted immune response (elevated IgG and IgM), reduced stress levels (lower corticosterone), and better egg quality (yolk color, shell thickness). These benefits likely stem from the fruit's bioactive compounds like xanthones, known for antioxidant and anti-inflammatory properties. As a natural, phytogenic additive, G. mangostana syrup offers a potential alternative to other plant based medicine in poultry farming, aligning with trends toward sustainable and organic livestock production. Further research required on optimal dosages and mechanisms could strengthen its application for other uses. Overall, G. mangostana syrup shows promise for improving poultry health and farm efficiency.

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