



Reflection of cinnamon, garlic and juniper oils supplement on rabbits performance

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Introduction

*** Recently, the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) have drawn attention to the potential hazards of antibiotic growth promoters and have recommended prudence in their use (FAO/WHO, 2004).**

*** Essential oils (EO) are the naturally occurring volatile components that can be separated from plants through steam distillation or solvents extraction (Benchaar *et al.*, 2007).**

Introduction

- * Essential oils can be extracted from **many parts of a plant, including** the leaves, flowers, stems, seeds, roots and barks.
- * However, the composition of the EO can vary among different parts of the same plant (Dorman and Deans, 2000).
- * Chemical differences among EO extracted from individual plants **or** different varieties of plants, **also exist and are attributed to:**
 - Genetically determined properties.
 - Age of the plant.
 - The environment in which the plant grows (Cosentio *et al.*, 1999).

Introduction

* Chemically, EO are variable mixtures of principally terpenoids, especially monoterpenes (C₁₀) and sesquiterpenes (C₁₅) although diterpenes (C₂₀) may also be present, and a variety of low molecular weight aliphatic hydrocarbons (linear, ramified, saturated and un saturated), **acids, alcohols, aldehydes, acyclic esters or lactoses and occasionally nitrogen and sulphur-containing compounds, coumarins and homologues phenylpropanoids** (Dormand and Deans, 2000).

Introduction

- * For many centuries, EO has been **used for** their essence, flavor, antiseptic and or preservative properties.
- * The EO have been reported to possess strong **antimicrobial properties** (Conner, 1993) related to a **number of small terpenoid and phenolic compounds** (Helander *et al.*, 1998). The EO particularly rich in phenolic compounds have been shown to possess high levels of antimicrobial activity (Fraser *et al.*, 2007) against both Gram-negative and Gram-positive bacteria (Dean and Ritchie, 1987).
- * Effect of EO in animal performance can be **affected by supplementation level** (Cardozo *et al.*, 2006) and **diet formulation** (Benchaar *et al.*, 2007).

Objective

This study was conducted to evaluate the effect of supplement cinnamon, garlic and juniper oils to rabbits diets on its performance.

Materials and Methods

- * Twenty-four growing male white New-Zealand rabbits weighed 818 ± 37.61 g in average were divided into four groups.
- * Rabbits were fed four experimental diets, the first as control and the other diets were supplemented with **0.05% (0.5 ml/kg feed) cinnamon** (*Cinnamomum zeylanicum* Blu.), **garlic** (*Allium sativum*) and **juniper** (*Juniperus communis* L) oils.
- * The diets were fed to cover the growing requirements for rabbits according to NRC recommendation.
- * The feeding trials were extended to 45 days to determine the growth performance and nutrients digestibility.

Materials and Methods

Table (1): Chemical composition of the basal diet

Moisture	Components, % on DM basis					
	OM	CP	CF	EE	NFE	Ash
7.19	82.10	15.70	16.20	2.98	47.22	17.90

Results

Table (2): Growth performance of rabbits fed diets supplemented with essential oils

Item	Experimental diets				Sig
	Control	Cinnamon oil	Garlic oil	juniper oil	
Initial body weight, g	811.17	810.00	795.00	854.17	NS
Final body weight, g	2122.33	2126.17	2268.17	2164.83	NS
Gain, g/period	1311.17 ^b	1316.17 ^b	1473.17 ^a	1310.67 ^b	*
Average body weight gain, g	29.14 ^b	29.25 ^b	32.74 ^a	29.13 ^b	*
Dry matter intake, g/head/day	105.00 ^A	90.00 ^B	96.49 ^{AB}	73.63 ^C	**
Dry matter intake, g/kg BW	72.74 ^A	62.40 ^A	63.86 ^A	49.06 ^B	**
Feed conversion, kg feed/kg gain	3.60 ^A	3.07 ^B	2.97 ^B	2.54 ^C	**

Results

Table(3): Nutrients digestibilities of rabbits fed diets supplemented with essential oils

Item	Experimental diets				Sig.
	Control	Cinnamon oil	Garlic oil	juniper oil	
Nutrients digestibilities, %					
DM	60.23	60.33	60.85	55.97	NS
OM	66.52	65.64	67.15	62.10	NS
CP	78.37 ^A	77.99 ^A	79.23 ^A	74.08 ^B	**
CF	33.08 ^B	31.75 ^B	37.24 ^A	31.97 ^B	**
EE	68.72	77.32	78.56	75.63	NS
NFE	74.03	73.42	72.67	67.59	NS
Feeding value, %					
TDN	57.17	56.82	58.11	53.86	NS
DCP	12.31 ^A	12.24 ^A	12.44 ^A	11.63 ^B	**

Conclusion

From the previous results it can be concluded that garlic oil supplement was improved daily gain and feed conversion for growing rabbits.

Thank You for Your Attention