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Effect of Oral Levamisole Hydrochloride on Feed Intake and Body Weight of Broiler Chicks

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Abstract: Levamisole hydrochloride was orally administered at 3.75, 7.5, 15.0 and 30.0 mg kg^{-1} b.w. doses to different groups of Ranikhet La Sota vaccinated broiler chicks. Levamisole hydrochloride(given orally) in all dose levels tested showed reduced Cumulative feed intake, better cumulative feed efficiency and enhanced Cumulative body weight gain.

Key words: Oral levamisole, hydrochloride, feed intake

INTRODUCTION

Broiler production is considered to be an economical enterprise only when broilers convert efficiently what they eat. The means of achieving an optimal growth performance includes balanced nutrition, proper management and prophylactic measures against diseases. Because of the growing awareness and resentment against the use of feed additives, there is a need to manipulate growth performance with less or no feed additive drug(s). Several ways and methods have been attempted over the years in this direction. Immunomodulation is one of the methods of promoting growth in animal production[1]. Levamisole hydrochloride, an immunomodulator, has been reported to increase the body weight of stressed birds due to its immunomodulatory functions[2]. With a view to investigate its influence on healthy broilers, the present study was taken up to study the effect of different doses of orally administered Levamisole hydrochloride on cumulative feed intake, feed efficiency and cumulative body weight gain.

MATERIALS AND METHODS

Day old sexed male broiler chicks of 'cobb' strain were randomly divided into groups of six chicks each. The chicks were leg banded and reared in three-tier individual cages (12x12x18) and reared for 8 weeks. Feed and water were provided individually *ad libitum* under standard managemental conditions. The broilers were fed with standard broiler starter mash and finisher mash from 0-4 weeks and 5-8 weeks, respectively.

Levamisole hydrochloride was orally administered at 3.75, 7.5, 15 and 30 mg kg^{-1} body weight doses to different groups of broiler chicks on day 7,8,9, 28, 29 and 30 after the primary and booster vaccination with Ranikhet-La Sota on day 7 and day 28, respectively.

Weekly body weight, cumulative feed intake and feed efficiency were recorded.

RESULTS AND DISCUSSION

In a overall picture Levamisole reduced the cumulative feed intake and resulted in a better feed efficiency in all the weeks of age. These results are in agreement with Klasing and Johnstone[3] who opined that one of the important growth related changes induced by an immune response is the suppression of appetite and voluntary feed intake (Table 1).

Despite reduced feed intake, Levamisole produced enhanced cumulative body weight gain in all the doses tested in all the weeks except at the 8th week. These results are similar to the results of the study of Ramteke[4]. In earlier studies, Levamisole hydrochloride has been reported to increase body weight gain in birds which had been experimentally infected with oocysts of Eimeria species[5,2,6]. The present study indicated that Levamisole hydrochloride could enhance body weight gain even in healthy broilers. However, the drug's influence on cumulative body weight gain at the 8th week of age was not as significant as that of 4th week and 6th week. Since the drug was withdrawn on day 30, it is presumed that the influence was better on day 42 than on day 56 due to its pharmacokinetic properties (Table 2).

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Table 1: Effect of levamisole hydrochloride(oral administration) on cumulative feed intake and feed efficiency of broilers

	Cumulative feed intake (g)				Cumulative feed efficiency			
Groups	0-14 days	0-28 days	0-42 days	0-56 days	0-14 days	0-28 days	0-42 days	0-56 days
Control	406±12^{c}	1214±26^{d}	2274±48^{b}	4019±66^{b}	2.65±0.11^{c}	3.51±0.11^{c}	2.81±0.08^{d}	2.99±0.08^{c}
Levamisole 3.75 mg kg^{-1} b.w	375±10^{b*}	1150±18^{c*}	2137±35^{a*}	3683±42^{a**}	2.39±0.06^{b*}	2.91±0.10^{b**}	2.21±0.05^{c**}	2.66±0.07^{b**}
Levamisole 7.50 mg kg^{-1} b.w	329±8^{a**}	1048±24^{a**}	2032±34^{a**}	3638±41^{a**}	2.07±0.08^{a**}	1.93±0.05^{a**}	1.99±0.04^{a**}	2.42±0.01^{a**}
Levamisole 15.00 mg kg^{-1} b.w	321±5^{a**}	1063±10^{ab**}	2081±24^{a**}	3639±27^{a**}	2.11±0.01^{a**}	1.99±0.02^{a**}	2.04±0.02^{ab**}	2.41±0.02^{a**}
Levamisole 30.00 mg kg^{-1} b.w	342±6^{a**}	1110±14^{bc**}	2130±30^{a**}	3738±31^{a**}	2.27±0.04^{ab**}	2.07±0.02^{a**}	2.17±0.05^{bc**}	2.37±0.02^{a**}

Mean values within each column bearing atleast one common superscript do not differ significantly, *p<0.05,**p<0.01 as compared to the control

Table 2: Effect of levamisole hydrochloride (oral administration) on body weight of broilers

	Body weight (g)			
Groups	Day 14	Day 28	Day 42	Day 56
Control	154±4^{a}	348±12^{a}	809±8^{a}	1429±25^{a}
Levamisole 3.75 mg kg^{-1} b.w	158±4$^{a}_{ns}$	398±11^{b**}	966±11^{b**}	1388±21$^{a}_{ns}$
Levamisole 7.50 mg kg^{-1} b.w	159±3$^{a}_{ns}$	543±14^{c**}	1022±20^{c**}	1503±20$^{ab}_{ns}$
Levamisole 15.00 mg kg^{-1} b.w	153±2$^{a}_{ns}$	533±4^{c**}	1022±4^{c**}	1508±6$^{ab}_{ns}$
Levamisole 30.00 mg kg^{-1} b.w	151±2$^{a}_{ns}$	537±4^{c**}	983±10^{b**}	1579±19^{b*}

Mean values within each column bearing atleast one common superscript do not differ significantly, *p<0.05, **p<0.01 as compared to the control

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