

## **Effect of Neem leaf (*Azadirachta indica*) powder on growth performance of deep litter broilers**

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### **Abstract**

The present experiment was undertaken at the Livestock Production and Management (Unit), Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya, Satna (M. P.), on effect of Neem leaf (*Azadirachta indica*) powder on growth performance of deep litter broilers the day-old broiler chicks divided into three weight groups, to study the effects of day-old weight on the growth up to sixth week of age. The data collected on body weight, gain in weight, feed consumption and feed conversion ratio, etc., were subjected to statistical analysis. The experiment was conducted to determine the comparative growth performance and dressing yield of broilers as influenced by three weight groups of day-old chicks, viz., day-old chicks weight group (35-38 gm), middle weight group day-old chicks (39-41 gm) and high weight group day-old chicks (42-45 gm) when reared separately in deep litter. Sixty broilers day-old chicks were divided into three weight groups viz. chicks of low day old weight (LDOW), middle day old weight (MDOW) and high day old weight (HDOW) of twenty chicks in each. A bulb of 40 watt was left on in each deep litter during night water and feed was made available at all times.

**Key words:** Neem leaf powder, broilers growth, performance, deep litter.

### **Introduction**

Poultry industry has made enormous progress in boosting animal protein in the country. It is one of the most efficient and economical converter of vegetable food into animal protein and provides a quick and rapid outcome as compared to production of other proteins of animal origin. Decreased weight gain, management problems and infectious diseases are major constraints in the poultry sector. Several antibiotics have been in use as growth promoters of farm animals ever since. Most of the commercial poultry growers use antibiotics as growth promoters and to reduce the chance of occurrence of infectious diseases, which usually result in higher costs of production and ultimately lower net returns. The average growth improvement has been estimated to be between 4 and 8%, and feed utilization improved by 2 to 5% (Patrick *et al.* 2003). Concerns have been raised that the use of antibiotics as therapeutics and for growth promotion could lead to a problem of increasing resistance in bacteria of human and animal origin, particularly regarding resistance in gram - negative bacteria (*Salmonella* spp. and *Escherichia coli*). It is necessary that antibiotic residues in meat would not impair human health. Specifically, it has

been recommended that the use of penicillins, tetracyclines, tylosin, and sulfonamides as growth promoters are discontinued (Patrick *et al.* 2003). That is why these days poultry scientists are pondering, how poultry farmers can rear birds without using antibiotics and other drugs. They are giving more attention to the indigenous medicines. Some plants and their extracts improve feed intake and their enzymatic activity may have antimicrobial, coccidiostatic or anthelmintic effects. Pakistan has cultivated medicinal plants over a large area in different climatic conditions. All these plants have substances which can be used in poultry in one or the other way. One of these plants is Neem (*Azadirachta indica*) which is commonly called 'Indian Lilac' or 'Margosa', belongs to the family Meliaceae, subfamily Meloideae and tribe Melieae (Girish & Shankara 2008). In Pakistan, it is cultivated throughout Sindh, lower Balochistan, Southern Punjab and Southern NWFP (Durrani *et al.* 2008). Neem (*A. indica*) is among one of those trees in the world which are currently under extensive research. Various parts of neem tree have been reported to contain chemicals like azadiractin, nimbin, nimbindin, quercetin among others (Makeri *et al.* 2007, Blaney *et*

al. 1990) which have antimicrobial, antihelminth, antioxidant, antifungal, insecticidal, antiprotozoa and spermicidal activities (Elangovan *et al.* 2000) properties (Bonsu *et al.* 2012). *A. indica* is a fast growing evergreen tree which has a potential to provide medicinal and nutritive value to broilers (Schmutterer 1990). Broilers given neem leaf extract in water show improved nutrient conversation efficiency and weight gain (Gandhi *et al.* 1998). Neem also plays an important role in strengthening the immune system of the body. Increase in antibodies against new castle and infectious bursal disease viruses have been observed when neem is incorporated in poultry feeds (Durrani *et al.* 2008). Water based extract (10%) of neem leaves is reported to have anti-viral properties against, fowl pox, infectious bursal diseases (IBD) and Newcastle disease virus (NDV) and it significantly enhances the antibodies production against the IBD and NDV (Sadekar *et al.* 1998). The present study was therefore designed to record the effect of *A. indica* on immunity of commercial broilers against New castle and infectious bursal disease.

### Method and materials

The present experiment was conducted using day-old [45] commercial type broiler chicks of the same hatch. Purchased from skylark hatcheries (PVT) Naini, Allahabad Uttar Pradesh India, these were reared in the deep litter system in Pyarelal poultry form Sitapur Chitrakoot associated in LPM Unit faculty of Agriculture department of M.G.C.G.V.V. Chitrakoot, Satna M.P. India.

The experiment commenced on first April 2015 continued till 28 April 2015 for a period of fourth week

### Allocation of day-old broiler chicks

Day old 60 broiler chicks were weighted leg banded and distributed at random into three groups mainly A B and C of twenty chicks each. These were further sub dived into four sub groups of five chicks in each litter.

The chicks of treatment were fed 150 calorie and 60 broiler starter ration up to three weeks adlib and then shifted to finisher ration up to four weeks. Composition of ration was as follows –

### Proximate composition of experimental diets:

Ingredients percent	Starter Ration	Finisher Ration
M.E.K. Cal/1kg	2900	3000
Crude protein%	22	20
Crude Fiber%	7.39	8.95
Crude fat%	8.80	8.95

Initial weight of broiler chicks was recorded on arrival and then weekly top ascertain the growth rate and gain in weight. Feed consumption was also recorded weekly for each of three replicates (sub groups)] of each treatment throughout the experimental period to find out feed efficiency or feed conversion ratio (F.C.R.) of broiler chicks after completion of experiment three birds from each group were slaughtered to determine dressing percentage. Mortality record of chicks was also maintained. The average minimum and maximum ambient temperature was as follows -

Parameters	Maximum	Minimum
Temperature	42.2 °C	34.3 °C
Relative humidity	100%	94%

Broiler of all treatments was kept under similar management practices up to six (6) week in deep litter.

Twelve (12) battery type litter system feeders and water trough's were thoroughly cleaned disinfected dried and finally Sterilized by blue torch.

The feeders were disinfected and dried water troughs were disinfected with 0.2% potassium permanganate every day. A 20 watt bulb was left on for light in each litter during night.

Poultry unit to surrounding area was cleaned and disinfected daily by phenyl. Distribution of feed was done between 6:00 AM to 10:00 AM 12:00 PM to 4:00 PM and 6:00 PM to 10: 00 PM clean water was offered three times per day.

### Results and discussion

#### Body weight of day old chicks (gm)

Mean body weight of day old broiler chicks in A, B and C groups was 38.30, 38.05 and 38.60 gm, respectively. In general of the body weight of day old broiler chicks ranged from at 36 to 47 gm and the body weight of day old chicks on A, B and C groups ranged from 34-45, 35-44 and 35-45 gm, respectively. The differences in the body weight of day old chicks between three groups were non-significant.

**Body weights of broiler chicks at first week of age**

The mean body weight of broilers at one week age in group A, B and C was 165.25, 157.75 and 152.00 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 130-190, 130-190 and 0-180 gm, respectively. The differences in the body weight of broilers at one week of age due to three groups were non-significant.

**Body weights of broiler chicks at second week of age**

The mean body weight of broilers at one week age in group A, B and C was 380.75, 41.75 and 369.75 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 300-440, 335-465 and 0-485 gm, respectively. The differences in the body weight of broilers at second week of age due to three groups were non-significant.

**Body weights of broiler chicks at third week of age**

The mean body weight of broilers at one week age in group A, B and C was 784.50, 758.25 and 718.50 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 660-950, 0-930 and 0-930 gm, respectively. The differences in the body weight of broilers at third week of age due to three groups were non-significant.

**Body weights of broiler chicks at fourth week of age**

The mean body weight of broilers at one week age in group A, B and C was 1261.00, 1235.65 and 1164.35 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 1100-1450, 0-1630 and 0-1510 gm, respectively. The differences in the body weight of broilers at fourth week of age due to three groups were non-significant.

**Body weights of broiler chicks at five week of age**

The mean body weight of broilers at one week age in group A, B and C was 1685.50, 1625.25 and 1604.25 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 1540-1710, 0-2000 and 0-1920 gm, respectively. The differences in the body weight of broilers at five week of age due to three groups were non-significant.

**Body weights of broiler chicks at six week of age**

The mean body weight of broilers at one week age in group A, B and C was 2064.00, 1990.00 and 1969.25 gm, respectively. The body weight of broiler chicks at one week age in groups A, B, and C ranged from 1835-2060, 0-2310 and 0-2285 gm, respectively. The differences in the body weight of broilers at six week of age due to three groups were non-significant.

**Conclusion**

Present experiment was conducted to determine the comparative growth performance and dressing yield of broilers as influenced by three weight groups day-old chicks viz. low day –old chicks weight group (35-38 gm) middle weight group day old chicks (39-41 gm) and high weight group day old chicks (42-45) when reared separately in deep litter during summer season of normal humidity in Pyarelal poultry farm Sitapur, Chitrakoot Department of Live stock production and management, MGCGV, Chitrakoot, Satna, (MP). Sixty broilers day old chicks were divided into three weight groups viz. chicks of low day old weight (LDOW), middle day old weight (MDOW) and high day old weight (HDOW) of twenty chicks in each. A bulb of 40 watt was left on in each deep litter during night water and feed was made available at all times. Commercial (Amrit) broiler ration containing 22% c.p. and 2900 ME. K. cal was given upto three weeks and then finisher ration of 20% C.P. and 3000 ME. K. cal upto 6 weeks.

Parameters mean value	L.D.O.W.	M.D.O.W.	H.D.O.W.
Initial body weight (gm)	35.31	41.35	43.98

Body weight was slightly higher in LDOW (1.95 kg) followed by HDOW (1.95 kg) and MDOW (1.88 kg). The feed consumption was higher in LDOW (2.89 kg) followed by MDOW (2.431 kg) and HDOW (2.92 kg). There were no significant differences both in body weights and feed consumption in chicks. F.C.R. was slightly better in HDOW (2.20 kg) followed by MDOW (2.43 kg) and HDOW (2.54 kg) and differences in these were also non-significant .no mortality was recorded in both LDOW MDOW but broilers of HDOW mortality up to 4 per-cent was recorded . The differences between

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these were significant. Higher dressed yield was observed in broiler of MDOW group (84.73%) followed by HDOW (65.62%) and MDOW (59.93%). The differences in these were also non-significant. It was conducted weight groups of

day-old chicks had significant effect on growth performance of broiler. Rearing chicks of day-old weight group of 38 to 35 gm. may be beneficial for getting higher dressed yield though significant.

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