Int.J.Curr.Microbiol.App.Sci (2020) *9*(9): 2096-2106

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 9 (2020)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2020.909.261

Effect of Different Fortifications of Panchagavya with *Nigella sativa* and *Asparagus racemosus* on Biochemical Parameters in Poultry

Kamal Kishor[1]*, Y.P. Sahni[2], Sachin Kumar Jain[1], Shivani Gupta[1] and Snehal Mukesh Wasnik[1]

[1]Department of Veterinary Pharmacology and Toxicology, College of Veterinary Science and Animal Husbandry, Nanaji Deshmukh Veterinary Science University, Jabalpur-482001, Madhya Pradesh-India
[2]Director Research Services, Nanaji Deshmukh Veterinary Science University, Jabalpur-482001 Madhya Pradesh-India

**Corresponding author*

Keywords

Panchgavya, *Nigella sativa*, *Asparagus racemosus*, Narmada Nidhi, Biochemical parameters

Article Info

Accepted:
17 August 2020
Available Online:
10 September 2020

A B S T R A C T

The present study was investigating the effect of Panchgavya, *Nigella sativa* and *Asparagus racemosus* on biochemical parameters in poultry. The study was conducted on 96 healthy Narmada Nidhi day-old chicks, divided into 8 groups consisting 12 chicks with 2 replicates each. The diet of birds was supplemented with Panchgavya at the dose rate of 7 per cent, *Nigella sativa* at the dose rate of 1 per cent, *Asparagus racemosus* at the dose rate of 1 per cent of basal diet and their combinations daily for 56 consecutive days. It is concluded that the Total protein was increased significantly in all treatments groups as compared to control group. Maximum increased in total protein was obtained with supplementation of Panchgavya and *Nigella sativa* at day 42 of the experiment. High Density Lipoprotein concentration was increase significantly with supplementation of all treatments however maximum increased level of High Density Lipoprotein was recorded with combination of Panchgavya, *Nigella sativa* and *Asparagus racemosus.*

Introduction

The uses of antibiotics as growth promoters in poultry are facing serious criticism now days. If we focus on present scenario than, due to excessive use of antibiotics in the livestock's, the multi-drug resistance has been arises. The utilization of growth promoters of natural origin become of an area of interest (Wary, 2000). In poultry industry antibiotics have been used widely in world-wide in order to prevent poultry disease and overall increase

production. The use of antibiotics has been considered as hazardous with the unavoidable spread of bacterial resistance and cross resistance (Andremont, 2000). Lots of feed additives have been proven as growth promoters to avoid the massive use of antibiotics or at least decrease or minimize their inclusion in feeds, while maintaining a very efficient animal production to get safe edible food products (Islam *et al.,* 2005; Gomez *et al.,* 2012). In general, blood examination is performed for several reasons as a screening procedure to assess general health of body system (Jain, 1993). The biochemical estimation is also important to clinico-pathological diagnosis such as parasitism, bacterial septicemia, traumatic injury, nutritional deficiencies and physiological change to some tissue or organ of the body. For prevention of abnormalities in birds requires an understanding of how a disease changes the functioning of haematology, biochemical and electrolyte of the body system. Due to the clinical signs of illness in birds some times are very minute and occurs very short duration of period, clinical chemistry is necessary to evaluate cellular changes (Ritchie *et al.,* 1994). The blood examination as a way of finding the health status of animals has been documented (Kakade *et al.,* 1972; Muhammad *et al.,* 2004). It plays a vital role in physiological, nutritional and pathological status of organisms (Kakade *et al.,* 1972; Muhammad *et al.,* 2000). It had been reported that biochemical changes as a result of toxins have effects on haematological parameters (John, 1998; Karnish, 2003; Levene, 2003). In Ayurveda mentioned Panchgavya is one such formulation, which are prepared with five components derived from cow viz. milk, curd, ghee, urine and dung and can be used as growth promoters in animals (Dhama *et al.,* 2005). Panchgavya has been mention to be useful as hepatoprotective, anti-inflammatory, antipyretic and immunestimulant in rats. The herb *Nigella sativa* is known as "Kalonji". *Nigella sativa* has been extensively studied for its biological activities and therapeutic potential and it possess wide spectrum of therapeutic activities. Most of the therapeutic properties of this plant are due to the presence of pharmacological active principal thymoquinone, thymol and carvacol (Sarkar *et al.,* 2015). The family aspragaceae contain a medicinal herb *Asparagus racemosus* which is called as "Shatavari" or "Queen of herbs". *Asparagus racemosus* are traditionally used against topical wound or skin infection, diarrhoea, dysentery and various parasitic infections. This plant is also recommended in Ayurveda for prevention and treatment of gastric ulcers, dyspepsia and as a galactogogue. Some ayurvedic practitioners have been successfully employed *Asparagus racemosus* as anti-inflammatory, hepatoprotective, nervous disorder and certain infectious diseases (Sinha, 2011). The Panchgavya formulation and medicinal herbs *Nigella sativa* and *Asparagus racemosus* may serve as alternatives of antibiotics in poultry due to their therapeutic efficacy and minimum health hazards.

Materials and Methods

Plant material

Roots of *Asparagus racemosus* and seeds of *Nigella sativa* were procured from the Department of Aromatic and Medicinal Plants, Agriculture College, Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur, Madhya Pradesh. Roots of *Asparagus racemosus* and seeds of *Nigella sativa* were dried, crushed and used for supplementation of diet in chicks/birds.

Preparation of Panchgavya

The Panchgavya was prepared by using fresh Cow dung (5 parts), urine (3 parts), milk (2

parts), curd (2 parts) and ghee (1 part) obtained from indigenous cow of Livestock Farm Adhartal, Jabalpur along with other ingredients viz. sugarcane juice (3 parts), tender coconut juice (3 parts), ripened banana (12 numbers) and toddy (2 parts) as per the method described by (Natarajan, 2003). The fresh Cow dung was thoroughly mixed with ghee in a wide mouth mud pot and kept for three days. The above mixture was thoroughly mixed once daily. On the fourth day, other ingredients were added to the mud pot and mixed properly. The pot was placed in shade and mixed thoroughly twice a day for 30 days to obtain Panchgavya. After 30days the Panchgavya was ready for experimental use.

Experimental birds

The study was conducted on a total of 96 healthy Narmada Nidhi day-old dual purpose coloured chicks were procured from All India Co-ordinated Research Project (AICRP) on poultry breeding Farm Adhartal, Jabalpur (M.P) and maintained in deep litter system at project poultry Live Stock Farm (LSF) Adhartal, Jabalpur (M.P). All the experimental birds were kept under constant observations during the entire period of experiment (Table 2).

Brooding and rearing of chicks

Initially the poultry shed was disinfected with the commercially available disinfectants followed by the cleaning of shed. The complete house was whitewashed and properly fumigated 4-5 days before the start of experiment. The chicks pens were prepared accordingly as per the design of experiment in order to provide separate space for the each replicated groups. The feeders and waterers were cleaned thoroughly and sun dried. Rice husk and saw dust was used as bedding material. During the period of first 3-4 days newspaper were spread over litter material. Every morning and evening the linear chicks feeders were filled with the weighed quantity of experimental diet and residual feed was collected and weighed at end of week. Fresh and clean water was offered during the entire experiment. Uniform conditions of housing, brooding and watering were maintained in all the groups except dietary treatments. A total 96 chicks was randomly divided into eight groups with respective two replicates and placed in pans as per experimental design.

Basal diet of experimental birds

The basal diets consist of 20 per cent CP and 2800 kcal. ME/kg of diet was provided to Narmada Nidhi birds (Table 1).

Collection of blood

Two ml fresh whole blood was collected without anticoagulant for determination of biochemical profile. Serum was separated after centrifugation of clotted whole blood at 3,500 rpm for 20 min. Serum and EDTA blood was kept at 4°C till further analysis (Miraghaee *et al.*, 2011).

The following biochemical parameters were studied

Alanine Transaminase (ALT) (IU/L)
Aspartate Aminotransferase (AST) (IU/L)
Albumin (g/dl)
Globulin (g/dl)
Total protein (g/dl)
Triglycerides (mg/dl)
Cholesterol (mg/dl)
Low Density Lipoprotein (LDL) (mg/dl)
High Density Lipoprotein (HDL) (mg/dl)

All the biochemical parameters were estimated using Erba standard assay kits using semi-automatic biochemical analyser (Erba Mannheim) at Department of Veterinary Pathology, Veterinary College, Jabalpur.

Statistical analysis

The data were analyzed using two way analysis of variance and difference among treatments was compared by Duncan's Multiple Range Test (DMRT) and this standard statistical design outlined by Snedecor and Cochran 1994.

Results and Discussion

The findings of serum biochemical analysis of birds supplemented with Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations have been depicted in table 3 to 11.

Table.1 Composition of basal diet per 100 kg

S. No.	Ingredients	Quantity per 100 kg basal diet
1.	Maize	62 kg
2.	Rice polish	02 kg
3.	Soya bean	31 kg
4.	Lime stone powder	02 kg
5.	Di-calcium phosphate	300 g
6.	Vitamin + Mineral mixture	2.5 kg
7.	Salt	200 g
	Total	100kg

Table.2 Design of experiment

S.No.	Group	Treatment with basal diet	Replicate	No. of birds per replicate	No. of birds per treatment
1	T1	Control	R1 R2	06 06	12
2	T2	Panchgavya @ 7.5 per cent	R1 R2	06 06	12
3	T3	*Nigella sativa* @ 1 per cent	R1 R2	06 06	12
4	T4	*Asparagus racemosus* @ 1 per cent	R1 R2	06 06	12
5	T5	Panchgavya @ 7.5 per cent and *Nigella sativa* @ 1 per cent	R1 R2	06 06	12
6	T6	Panchgavya @ 7.5 per cent and *Asparagus racemosus* @ 1 per cent	R1 R2	06 06	12
7	T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	R1 R2	06 06	12
8	T8	Panchgavya @ 7.5 per cent, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	R1 R2	06 06	12

Table.3 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on Alanine Transaminase (ALT) in birds

Group	Treatment with basal diet	Day 42 (IU/L)	Day 56 (IU/L)
T1	Control	22.51^{b}±2.17	30.28^{a}±2.84
T2	Panchgavya @ 7.5 per cent	23.15^{b}±0.96	32.63a±1.77
T3	*Nigella sativa* @ 1 per cent	22.25^{b}±0.98	28.25^{a}±1.80
T4	*Asparagus racemosus* @ 1 per cent	19.91^{b}±1.22	39.07^{a}±4.88
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	25.76^{a}±4.44	29.27^{a}±1.86
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	22.96^{b}±0.44	32.25^{a}±2.99
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	24.82^{b}±2.28	37.36^{a}±3.22
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	25.37^{a}±0.93	34.47^{a}±4.46

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.4 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on Aspartate Aminotransferase (AST) in birds

Group	Treatment with basal diet	Day 42 (IU/L)	Day 56 (IU/L)
T1	Control	164.35^{b}±06.69	280.60^{a}±09.93
T2	Panchgavya @ 7.5 per cent	179.01^{b}±04.79	217.40^{a}±10.9
T3	*Nigella sativa* @ 1 per cent	164.3^{b}±13.70	217.10^{a}±11.60
T4	*Asparagus racemosus* @ 1 per cent	147.21^{b}±06.94	200.27^{a}±06.35
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	194.50^{b}±17.51	271.51^{a}±09.28
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	196.73^{b}±09.89	234.66^{a}±07.71
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	184.83^{b}±09.68	260.84^{a}±05.77
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	195.80^{b}±13.90	245.11^{a}±05.35

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.5 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on Albumin in birds

Group	Treatment with basal diet	Day 42 (g/dl)	Day 56 (g/dl)
T1	Control	1.35^{b}±0.08	1.59^{a}±0.06
T2	Panchgavya @ 7.5 per cent	1.57^{a}±0.06	1.48^{a}±0.04
T3	*Nigella sativa* @ 1 per cent	1.49^{a}±0.09	1.53^{a}±0.10
T4	*Asparagus racemosus* @ 1 per cent	1.44^{a}±0.12	1.55^{a}±0.02
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	1.65^{a}±0.05	1.59^{a}±0.07
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	1.61^{a}±0.04	1.82^{a}±0.89
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	1.66^{a}±0.09	1.55^{a}±0.07
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	2.11^{a}±0.07	1.46^{b}±0.04

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.6 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on globulin in birds

Group	Treatment with basal diet	Day 42 (g/dl)	Day 56 (g/dl)
T1	Control	07.51^{b}±0.46	11.79^{a}±0.83
T2	Panchgavya @ 7.5 per cent	10.26^{a}±0.92	11.79^{a}±0.83
T3	*Nigella sativa* @ 1 of basal diet	08.23^{a}±0.90	09.08^{a}±0.74
T4	*Asparagus racemosus* @ 1 per cent	08.99^{a}±1.03	09.57^{a}±0.47
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	13.05^{a}±0.58	09.69^{b}±0.27
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ per cent	12.36^{a}±0.97	09.53^{b}±0.42
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	11.02^{a}±1.06	08.68^{a}±0.48
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	11.60^{a}±0.57	13.67^{a}±4.02

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.7 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on total protein in birds

Group	Treatment with basal diet	Day 42 (g/dl)	Day 56 (g/dl)
T1	Control	08.86^{b}±0.51	13.37^{a}±0.80
T2	Panchgavya @ 7.5 per cent	11.83^{a}±0.98	11.05^{a}±0.42
T3	*Nigella sativa* @ 1 per cent	09.72±^{a}0.95	10.62^{a}±0.78
T4	*Asparagus racemosus* @ 1 per cent	10.43^{a}±1.12	11.31^{a}±0.47
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	14.71^{a}±0.61	11.29^{b}±0.28
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	13.99^{a}±1.01	11.35^{b}±0.42
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	12.68^{a}±1.11	10.24^{a}±0.48
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	13.71^{a}±0.62	15.14^{a}±4.04

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.8 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on triglycerides in birds

Group	Treatment with basal diet	Day 42 (mg/dl)	Day 56 (mg/dl)
T1	Control	117.00^{a}±11.60	51.86^{b}±1.82
T2	Panchgavya @ 7.5 per cent	119.31^{a}±08.03	68.60^{b}±2.70
T3	*Nigella sativa* @ 1 per cent	099.19^{a}±09.69	47.45^{b}±5.06
T4	*Asparagus racemosus* @ 1 per cent	098.90^{a}±11.80	65.27^{b}±9.19
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	166.60^{a}±15.00	75.79^{b}±8.19
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	130.00^{a}±14.60	62.60^{b}±2.77
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	124.50^{a}±13.40	84.40^{b}±10.20
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	131.80^{a}±20.80	53.89^{b}±5.66

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.9 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on Cholesterol in birds

Group	Treatment with basal diet	Day 42 (mg/dl)	Day 56 (mg/dl)
T1	Control	173.54^{a}±07.18	163.00^{a}±10.80
T2	Panchgavya @ 7.5 per cent	169.26^{a}±08.42	137.90^{b}±11.30
T3	*Nigella sativa* @ 1 per cent	202.40^{a}±16.78	159.70^{b}±10.10
T4	*Asparagus racemosus* @ 1 per cent	216.10^{a}±19.50	145.36^{b}±09.24
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	273.67^{a}±08.27	161.17^{b}±06.12
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	269.70^{a}±11.00	173.86^{b}±08.54
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	221.90^{a}±17.70	151.69^{b}±09.16
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	216.80^{a}±14.90	121.20^{b}±11.30

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.10 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on Low Density Lipoprotein (LDL) in birds

Group	Treatment with basal diet	Day 42 (mg/dl)	Day 56 (mg/dl)
T1	Control	121.10^{b}±1.76	193.58^{a}±13.30
T2	Panchgavya @ 7.5 per cent	117.24^{b}±4.51	171.20^{a}±18.38
T3	*Nigella sativa* @ 1 per cent	134.54^{b}±2.85	200.04^{a}±07.60
T4	*Asparagus racemosus* @ 1 per cent	125.70^{a}±2.11	139.20^{a}±05.50
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	127.88^{a}±1.61	140.70^{a}±11.50
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	123.74^{b}±3.90	169.50^{a}±14.30
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	123.88^{a}±3.96	133.70^{a}±11.90
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	124.68^{b}±3.13	176.50^{a}±15.70

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, p≤0.05)

Table.11 Effect of dietary supplementation of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations on High Density Lipoprotein (HDL) in birds

Group	Treatment with basal diet	Day 42 (mg/dl)	Day 56 (mg/dl)
T1	Control	32.43^{b}±2.22	61.42^{a}±1.77
T2	Panchgavya @ 7.5 per cent	48.19^{b}±3.58	62.98^{a}±2.56
T3	*Nigella sativa* @ 1 per cent	47.04^{b}±3.95	67.71^{a}±5.43
T4	*Asparagus racemosus* @ 1 per cent	39.24^{b}±2.53	60.23^{a}±1.93
T5	Panchgavya @ 7.5 and *Nigella sativa* @ 1 per cent	49.27^{a}±4.01	50.05^{a}±2.78
T6	Panchgavya @ 7.5 and *Asparagus racemosus* @ 1 per cent	52.97^{b}±2.94	64.38^{a}±2.89
T7	*Nigella sativa* and *Asparagus racemosus* @ 1 per cent	43.98^{b}±2.16	67.35^{a}±1.22
T8	Panchgavya @ 7.5, *Nigella sativa* and *Asparagus racemosus* @ 1 per cent	57.49^{a}±3.33	58.73^{a}±2.36

Mean values in the same column and same row bearing different superscripts differ significantly (^{a,b,}, $p \leq 0.05$)

The effect of Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations was observed on biochemical parameters viz. Alanine Transaminase (ALT), Aspartate Aminotransferase (AST), Albumin, Globulin, Total protein, Cholesterol, Triglycerides, High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL) contents. The observations recorded on day 42 and 56 of experiment indicated that Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations significantly increased Albumin, Globulin and Total protein levels in all treated groups. The biochemical parameters such as Alanine Transaminase (ALT), Aspartate Aminotransferase (AST), High Density Lipoprotein (HDL) and Low Density Lipoprotein (LDL) did not show any variations in comparison to control group supplemented with basal diet. The increased level of Albumin, Globulin and Triglycerides with supplementation of *Asparagus racemosus* has been reported by Kant *et al.*, (2014) who suggested an inclusion of *Asparagus racemosus* in poultry ration to improve overall growth performance. Toghyoni *et al.*, (2010) also cited the similar findings on serum Albumin, Globulin and Total protein levels with supplementation of 1 per cent *Nigella sativa* in birds. It is evident that blood serum proteins reflect the conditions on organisms and changes occur due to influence of internal and external factors. The indigenous herbs *Nigella sativa* and *Asparagus racemosus* possess anti-stressors and anti-oxidants activity which is mainly due to their ability to scavenge free radicals and there by inhibit lipid peroxidation (Badari *et al.*, 2003) which could be a possible mechanism to improve biochemical profile of birds.

Statistical analysis also revealed a significant reduction in Cholesterol and Triglycerides

levels in groups treated with Panchgavya, *Nigella sativa*, *Asparagus racemosus* and their combinations. Similar findings have been reported by Bhosale *et al.*, (2012) who observed lipid lowering effect of root powder of *Asparagus racemosus*. The dietary inclusion of broiler feed with *Nigella sativa* caused significant reduction in Cholesterol and lipid profile as reported by Gilani *et al.*, (2018) also support our findings. The hypo-cholesteremic and hypo-lipidimic activity of Panchgavya may be associated with the 4.5 pH of Panchgavya during its fermentation. The lowered pH of Panchgavya is due to presence of *Lactobacillus* bacteria which leads to production of organic acids. The presence of organic acids decreased gut pH and hence, interferes with the activity of microbial enzymes in the gut. It may further stimulate the bacterial cells to expand energy intra-cellularly leading to reduction in cholesterol and lipid profile of birds.

In conclusions, the biochemical profile viz. Total protein was also increased significantly in all treatments groups as compared to control group. Maximum increased in total protein was obtained with supplementation of Panchgavya and *Nigella sativa* at day 42 of the experiment. High Density Lipoprotein (HDL) concentration was increase significantly with supplementation of all treatments however maximum increased level of High Density Lipoprotein (HDL) was recorded with combination of Panchgavya, *Nigella sativa* and *Asparagus racemosus.*

Acknowledgements

The authors express sincere thanks to the Director Research Services (NDVSU) providing necessary facilities and funds for present research work. The authors are gratefully acknowledge the kind support of AICRP (All India Co-ordinated Research Project), Department of Veterinary Poultry Science, College of Veterinary Science and A.H. (NDVSU) Jabalpur (M.P). The authors are also thankfully to Dr. Neha Shukla for help in blood collection and laboratory analysis.

References

Andremont A. Consequences antibiotic therapy to the intestinal ecosystem. Annales Françaises d'Anes- thésie et de Réanimation. 2000; 19:395.

Arslan SO, Gelir E, Armutcu F, Coskun O, Gurel A, Sayan H and Celik IL. The protective effect of Thymoquinone on ethanol-induced acute gastric damage in the rat. Nutrition Research. 2005; 25:673.

Badari OA, Taha RA, Gamal AM and Abdel-Wahab MH. Thymoquinone is a potent superoxide anion scavenger. Drug and Chemical Toxicology. 2003; 26: 87-98.

Bhosale RR, Jugal KB, Jaju, S, Padwal, L, Jadhav, RR and Deshmukh VS. Lipid lowering and antioxidant potential of *Asparagus racemosus* in hyperlipidemic rats. International Journal of Basic Clinical Pharmacology. 2012; 1(3): 168-173.

Dhama K, Chauhan RS and Lokesh S. (2005). Anticancer activity of cow urine: current status and future directions. International Journal of Cow Science. 2005; 1: 1-25.

Gilani SMH, Zehra S, Galani S and Ashraf A. Effect of natural growth promoters on immunity and biochemical and haematological parameters of broiler chickens. Tropical Journal of Pharmaceutical Research. 2018;17(4): 627-633.

Gomez S, Angeles ML, Mojica MC and Jalukar S. Combination of an enzymatically hydrolyzed yeast and yeast culture with a direct fed microbial in the feeds of broiler chickens. Asian Australian Journal of Animal Science. 2012; 25: 665.

Islam KM, Schuhmacher SA and Gropp MJ. Humic acid substances in animal agriculture. Pakistan Journal of Nutrition.

2005; 4: 126.
Jain NC. Essential of Veterinary Hematology, Lea and Febiger. 1993; Philadelphia.
John J. The Biology of germinal centers in lymphoid tissues. Txi Springer-Verlag.1998; 157.
Kakade ML, Simons NR, Liener IE and Lambert JW. Biochemical and nutritional assessment of different varieties of soybean. J. Agric. Food Chem. 1972; 20: 87.
Kant S, Ali N, Chandra G and Siddique RA. Effect of shatavari and vitamin E on hemato-biochemical profile of broilers during the winter season. Veterinary World. 2014; 7(11): 948-951.
Karnish AR. Immune regulation in health and disease. Academic Press San Diego. 2003; 121.
Levene WH and Gorgen B. Fundamental Immunology. 2003; Raven Press, New York. 256.
Mathivanan R, Edvin SC, Amutha R and Viswanathan K. Panchgavya and *Andrographis paniculata* as alternatives to antibiotic growth promoter on broiler production and carcass characteristics. International Journal of Poultry Science. 2007; 5: 1144.
Miraghaee SS, Heidary B, Almasi H, Shabani A, Elahi M and Nia MHM. The effect of *Nigella sativa* powder (black seed) and Echinacea purpuria (L.) Moench extract on performance, some blood biochemical and haematological parameters in broiler chickens. African Journal of Biotechnology. 2011; 10(82): 19249-19254.
Muhammad NO, Adeyina AO and Peters OM. Nutritional evaluation of fungi treated cocoa bean shell. Nigerian J. Pure and Appl. Science. 2000; 5: 1059.
Muhammad NO, Oloyede OB, Owoyele BV and Olajide JE. Deleterious effect of defatted *Terminalia catappa* seed meal-based diet on haematological and urinary parameters of albino rats. NISEB J. 2004; 4(2): 51.
Natarajan, K. Panchgavya: a manual 1st (Edn.) 2003; pp: 1-4.
Ritchie BW, Harrison JG and Harrison R L. Avian Medicine, Winger's Publishing, Inc, Florida 1994.
Sarkar CK, Mostofa M, Sikder MMH, Ansari WK, Ahamed MM, Parvej MS and Hasan MR. Efficacy of kalo jeera seeds (*Nigella sativa*) and Thankuni (*Centella asiatica*) supplementation on the growth performance of broiler chicken. International Journal. 2015; 1(4): 196-200.
Sinha SN and Biswas M. Effect of extracts from *Asparagus racemosus* wild root against pathogenic bacteria. International Journal of Applied Biology and Pharmaceutical Technology. 2011; 2(3): 312-314.
Snedecor GW and Cochran WG. (1994). Statistical Methods. Publ., Oxford and IBH publishing Co. New Delhi 1994; 4: 445-446.
Toghyani M, Toghyani M, Gheisari A, Ghalamkari G and Mohammadrezaei M. Growth performance, serum biochemistry and blood hematology of broiler chicks fed different levels of black seed (Nigella sativa) and peppermint (*Mentha piperita*). Livestock Science. 2010; 129(1-3): 173-178.
Wray C and Davies RH. Competitive exclusion-an alternative to antibiotics. Veterinary Journal. 2000; 59: 107-108.

How to cite this article:

Kamal Kishor, Y.P. Sahni, Sachin Kumar Jain, Shivani Gupta and Snehal Mukesh Wasnik. 2020. Effect of Different Fortifications of Panchagavya with *Nigella sativa* and *Asparagus racemosus* on Biochemical Parameters in Poultry. *Int.J.Curr.Microbiol.App.Sci.* 9(09): 2096-2106. doi: https://doi.org/10.20546/ijcmas.2020.909.261