



A PRELIMINARY STUDY ON WEIGHT PROMOTING ACTION OF A FEW INDIGENOUS HERBAL DRUGS (*BRIMHANIYA MAHAKASHAYA*)

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ABSTRACT:

Background: Poultry production contributes evidently to bridging the global food gap. Many nations have limited the use of antibiotics as growth promoters due to increasing bacterial antibiotic tolerance/resistance, as well as the presence of antibiotic residues in edible tissues of the birds. Consequently, the world is turning to use natural alternatives to improve birds' productivity and immunity. **Material and Methods:** The *Brimhaniya Mahakashaya* told by our *Acharyas* exhibits promising and positive health benefits due to its antioxidant, carminative, growth promoting activities. The same was elicited in broilers in comparison with mysore feed as control. **Results:** In poultry, dietary inclusion of *Brimhaniya Mahakashaya* revealed encouraging results in improving feed intake, body weight gain, feed efficiency, and feed conversion ratio, as well as reducing mortality, increasing livability, increasing disease resistance, reducing stress impacts, and maintaining the health of the birds.

Keywords: *Brimhaniya Mahakashaya*, Poultry, Weight Promoting, Herbal Drugs

INTRODUCTION:

Synthetic and mineral formulations are being replaced by herbs and herbal formulations. These factors necessitated preserving, cultivating, and propagation of herbs, as they are fast dwindling on account of deforestation, urbanization, industrialization and exploitation in the name of modernization [1]. The feed additive should be safe, economic, biodegradable, free from environmental hazards, non-toxic, overcoming drug resistance problems and improving productivity. Thus, an eco-friendly substitution of antibacterial growth promoters (AGPs) with a natural growth promoter in the avian share has recently attained considerable attention to improve productivity [2]. Traditional medicinal herbs are common therapeutics and more potent in combating the negative impacts of thermal stress on broiler productivity [3]. The principal mechanism by which medicinal herbs act in poultry feed is to improve the metabolism by combating stress and regulating hormones [4]. Drugs of plant kingdom are considered as the best due to their high medicinal value, easy availability and low economics. They have the least dangerous side effects and yet can eliminate health problems. Rightful use of

plants in medicine has been outstanding in *Ayurvedic* systems of medicine from time immemorial as evidenced from the authentic literature such as *Rig Veda*, *Atharva Veda*, *Charaka Samhita*, *Ashtanga Hridaya*, *Sushruta Samhita*, *Nighantus* etc. these literatures have discoursed principles of medicine with an objective of maximum safety profile by using majority of drugs from the natural herbal kingdom [5].

In the treatises, the drugs particularly of plant origin have been enormously described with ancient taxonomical descriptions, properties, pharmacological actions and therapeutic indications. *Charaka Samhita* [6] and *Sushruta Samhita* [7] are the original scriptures of Ayurveda. Both the *samhitas* are contemporary created during 1000 B.C. In these *samhita* two main objects is well defined i.e to promote the health of healthy person and to cure the disease.

Aims and objectives:

Comprehensive review of drugs under *Brihaniya Mahakashaya* of *Charaka Samhita* C.Su.4 was done and on broiler chickens to check the effect of the same in weight promotion in comparison with conventional methods.

Review of Mahakashaya:

Table 1: Shows analysis of *Brimhana Dravyas* through *Rasapanchaka*

Dravya	Botanivcal Name	Rasa	Guna	Veerya	Vipaka	Karma
<i>Kshirini</i> (<i>Sariva</i>) ^[8]	<i>Hemidismus indicus</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Dipana</i>
<i>Rajakshavaka</i> (<i>Dugdika</i>) ^[9]	<i>Euphorbia hirta</i>	<i>Madhura, Lavana, Katu, Tikta</i>	<i>Guru, Ruksa, Tiksna</i>	<i>Ushna</i>	<i>Katu</i>	<i>Vrsya, Dhaturvrdhikara, Stnyavardhak</i>
<i>Ashwagandha</i> ^[10]	<i>Withania somnifera</i>	<i>Tikta, Kashaya</i>	<i>Laghu</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Rasayana, Balya, Vajikaran</i>
<i>Kakoli</i> (<i>Shatavari</i>) ^[11]	<i>Asparagus racemosus</i>	<i>Madhura</i>	<i>Guru</i>	<i>Shita</i>	<i>Madhura</i>	<i>Brmhana, Sukrala</i>
<i>Ksirakakoli</i> (<i>Shatavari</i>) ^[11]	<i>Asparagus racemosa</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Rasayana, Vrsya, Brmhana, Stanyajanna, Sukravardhaka</i>
<i>Vatyayani (Bala)</i> ^[12]	<i>Sida cordifolia</i>	<i>Madhura</i>	<i>Guru, Snigdha, Picchila</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vrsya, Balya, Rasayana, Sukrala,</i>
<i>Bhadraudani (Bala)</i> ^[12]	<i>Sida cordifolia</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vrsya, Balya, Rasayana, Sukrala,</i>
<i>Bharadwaji (Vanakarpasa)</i> ^[13]	<i>Thespesia lampas</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Vriya, Stanyajanana, Kaphakara</i>
<i>Payasya (Vidarikanda)</i> ^[14]	<i>Pueraria tuberosa</i>	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Shita</i>	<i>Madhura</i>	<i>Balya, Brmhana, Vrsya, Stanyadu, Rasayani, Jivaniya</i>
<i>Rysyagandha (Vruddhdaru)</i> ^[15]	<i>Argyreia speciosa</i>	<i>Katu, Tiktha, Kasaya, Madhura</i>	<i>Sara, Laghu, Snigdha</i>	<i>Ushna</i>	<i>Katu, Madhura</i>	<i>Rasayana, Vrishya, Balya, Agnivardhanam</i>

METHODS AND MATERIALS:

Species: Poultry broilers

Groups:

1. Control group-Mysore feed

2. Trial group-Brimhaniya Mahakashaya

Dose: The dose was administered to the broiler in the rearing period at regular intervals (Common for both groups)

Day 1: Maize+Glucose+Electrolyte 10gm/ 1 Litre Water

Day 2-5: Oxytetracycline Powder 1 Gram/ 1 Litre Water

Day 6-8: Tonic Containing Vitamins A, D3, E and C

Day 7: F1 Vaccination

Day 15: IBD Vaccination

Day 27-30: F1 Vaccination

4 to 5 weeks: Liver tonic

Place of Study: Poultry farm in Tharlu, Dist-Bangalore, INDIA (in presence of experts in rearing)

Start date: 1st May 2023

End date: 31st July 2023

Duration of study: 45 days

Feed: In this study ready feed was supplied by Mysore feeds limited which has been the basic food employed as control. Besides, supplementation of the same by herbal additives was used as the trial drug.

Observation:

During the course of this study various physical parameters of broilers were studied to establish different relationships. Besides, the parameters were subjected to several statistical analyses to understand the plausible inter relationships between the same. (As shown in Table 1-4)

Table 1: Shows details of varied parameters of broilers fed on Mysore feeds-control

Parameters	Raw range		Mean	Standard deviation	Statistical range $X \pm 2SD$	
	Minimum	Maximum				
Body weight	1155	1860	1533.1	102.6	1254.4	1756.2
Defeathered weight	950	1500	1255.8	89.7	962.2	1484.5
Feather weight	100	200	156.2	35.7	90.1	180.8
Weight without viscera	800	1300	1084.5	98.0	839.4	1232.6
Liver weight	35	50	45.3	7.4	35.1	53.5
Dressed	740	1200	1005.1	85.6	776.9	1137.4

weight						
Bone weight	174	230	204.1	27.2	155.8	242.9
Muscle weight	566	921	862.5	69.1	548.5	969.6
Haemoglobin content	7.1	9.6	8.0	1.1	6.5	10.1
RBC content	1.8	2.5	2.0	0.2	1.7	2.6
PCV	26.1	33.9	28.8	4.0	25.5	36.5
Protein content	0.1870	0.2448	0.2019	0.0150	0.1740	0.2420

● X: Mean, SD: Standard Deviation

Table 2: Shows details of varied parameters of broilers fed on Brimhaniya mahakashaya Trial drug

Parameters	Raw range		Mean	Standard deviation	Statistical range $X \pm 2SD$	
	Minimum	Maximum				
Body weight	1320	1840	1505.3	125.4	1327.8	1738.3
Defeathered weight	1070	1450	1223.3	130.5	1076.2	1435.3
Feather weight	110	200	135.4	22.6	82.6	225.7
Weight without viscera	900	1300	1036.0	98.2	888.3	1280.6
Liver weight	40	55	44.2	4.5	30.3	60.2
Dressed weight	820	1200	957.1	90.1	833.7	1176.4
Bone weight	175	239	199.4	21.7	149.6	258.6
Muscle weight	775	961	759.1	105.2	724.2	1000.7
Haemoglobin	6.2	10.1	8.3	0.9	5.8	10.3

content						
RBC content	1.4	2.4	2.2	0.2	1.4	2.6
PCV	20.8	35.5	31.0	2.7	20.8	36.9
Protein content	0.1870	0.2391	0.2088	0.017	0.1810	0.2410

● X: Mean, SD: Standard Deviation

Table 3: Shows details of feed conversion among broilers-control

No of days	No of birds	Feed consumption in kgs		Weight gain in kgs		Feed conversion ratio	
		Total birds	Single bird	Total birds	Single bird	Total birds	Single bird
1	75	--	--	3.375	0.045	--	--
10	75	23.000	0.306	19.275	0.257	1.193	1.190
16	74	24.642	0.333	27.972	0.378	0.880	0.880
26	74	54.982	0.743	41.440	0.560	1.326	1.326
34	74	67.340	0.910	76.072	1.028	0.885	0.885
41	74	63.714	0.861	75.184	1.016	0.847	0.847
45	74	74.962	1.013	109.298	1.477	0.685	0.685
Total		308.640	4.166	109.298	1.477	2.823	2.820

Table 4: Shows details of feed conversion among broilers- Trial group

No of days	No of birds	Feed consumption in kgs		Weight gain in kgs		Feed conversion ratio	
		Total birds	Single bird	Total birds	Single bird	Total birds	Single bird
1	75	--	--	3.375	0.045	--	--
10	75	21.500	0.286	17.550	0.234	1.225	1.222
16	74	22.052	0.298	24.420	0.330	0.903	0.903
26	74	51.356	0.694	38.628	0.522	1.329	1.329

34	74	68.820	0.930	78.730	1.064	0.874	0.874
41	74	59.570	0.805	81.770	1.105	0.728	0.728
45	74	65.342	0.883	109.224	1.476	0.598	0.598
Total		288.64	3.896	109.224	1.476	2.642	2.639

RESULTS:

Various physical and physiological parameters of broilers have been studied to establish the plausible relationship among the same that would throw light on understanding of the relationship of physiological aspects with physical entities.

Feed conversion ratio:

In this parameter the quantity of food consumption by the broilers is compared with its weight gain randomly and at the onset of maturity, keeping the number of days of rearing as constant. The feed conversion reveals that the herbal drugs are better in comparison with the control. It is visualized in Table 3 and 4 that the feed consumption by the trial group of broilers is twenty kgs less than that of control. but the difference in weight among the two is 0.074kgs making it a highly significant change.

Mortality rate:

In this observation, survival and death of the animal during the experimentation due to various reasons were recorded. It was seen that one broiler from each group was dead

during the eighth and ninth days of rearing, exhibiting 1.33 percent mortality.

Behavior of broilers:

The overall behavior of broiler was recorded so as to make note of the adverse effect of the drugs if any. Special importance was given to food consumption, water intake, resting, bowel study, occurrence of specific diseases, etc. nothing significant was recorded in both the groups of broilers during the study.

Physical variations:

During the course of this investigation various physical parameters of broilers were studied to establish different relationships. During the study, attempt was made to find out the relationship between weight of the matured bird with various parameters like de-feathered weight, feathered weight, weight of the bird without viscera, liver weight, dressed weight, bone weight, muscle weight, hemoglobin content, RBC count, PCV, protein content individually subjecting to correlation analysis. Meanwhile, de-feathered weight of the bird was compared with liver weight as well as dressed weight in terms of finding the

correlation. Similarly, bone weight and dressed weight were compared with muscle weight and visceral weight respectively. The above analysis were done for both control and trial groups.

In each of the analysis, pearson correlation coefficient was calculated and compared with the tabulated 'r' values for given degrees of freedom at specific probability level ranging between 0.001p to 0.05p, to indicate the degree of relationship between the compared. Bird weights exhibited a strong positive correlation with de-feathered weight in both control and trial groups. Bird weight and feather weight show a positive correlation in control group at 0.02p for degrees of freedom 49, while the parameters exhibited no correlation in trial group. In both control and trial groups of broilers, the total weight of the body exhibited a strong positive correlation with the body weight without viscera.

The total body weight showed no significant correlation with hemoglobin content of the body in both the groups. A similar behavior was observed between body weight and RBC. A moderate positive correlation was exhibited by body weight and protein content of the muscles in control group (at df 13 and 0.05p). Bone weight exhibited no relationship with muscle weight.

DISCUSSION:

Though the modern concept of pharmacology and therapeutics scientifically evaluate weight promotion in animals and human beings by various methods such as supplementation of high caloric diet, enriched vitamin diet, minerals, trace elements, anabolic steroids etc. we are yet to understand specific integral drug regimen to promote as well as supplement body weight.

Contrary to this there has been a detailed discourse in different contexts on the weight promotion by a large number of authors in almost all Ayurvedic texts. Besides it is observed from the literature survey that there are more number of pharmacological concepts on the drug action in ancient literature than the modern texts of pharmacology.

The present study is limited to a few selected weight promoting drugs enlisted by charaka amongst *ksheerini*, *dugdhika*, *ashwagandha*, *vatyahini*, *bhadrouthani*, *kakoli*, *ksheerakakoli*, *karpasi*, *payasya*, *vrasyagandha*, it is evident that a few of them are extinct and some being endangered species, these have been considered as controversial drugs. Under these circumstances it was planned to substitute *kakoli* and *ksheerakakoli* with *ashwagandha* (*Withania somnifera*) in accordance with *bhavaprakasha nighantu*. The drugs *vatyayani* and *bhadroudhani* are substituted with *bala* (*Sida cordifolia*).

The mode of action of *Brimhana Dravya's* can be accessed on the ground of its *Gunapanchaka*. It is found that majority of ingredients have predominance of *Madhura Rasa, Shita Virya, Madhura Vipaka, Guru snigdha guna and Vatapitta Shamaka*, these all properties nourish all *Dhatu* and enhancement of *Dhatu-poshaka Tatwa*, resulting in correction and promotion of the *Dhatu* causing *Brimhana* effect. Here the chickens fed with *brimhaniya mahakashaya* showed marked weight gain due to this effect of the *mahakashaya dravyas*.

It is an important *upakrama in shadupakrama & Dwividopakrama* and important treatment modalities for many diseases. The *nirukti* of *brimhana karma* is to make body stout [16]. Anything which increases the size of body or whatever adds to the corpulence of the body is *brimhana* or nourishing therapy [17]. *Brimhaniya* is that which is useful for enlarging the body, promotes the volume as well as weight of the body. *Guru, Sita, Mrudu, Bahal, Sthula, Picchila, Manda*, are the properties of *brimhana dravya* [18]. *Brimhana guna* is also similar to the *Ojas guna*. *Ojas* is the *Sara* of all the *Dhatu* [19]. Therefore we can state that *brimhana dravya* nourishes all the *Dhatu*. The *panchabhautik* composition of *Brimhana dravya* is *Pruthvi* and *Aap mahabuta* [20]. *Brimhana* is *shamana* for *vata* and *vatapitta*

combination [21]. *Brimhana* means increase in size & weight of body by increasing Carbohydrates, Protein & Fat content in our body.

CONCLUSION:

Drugs of *Brihaniya Mahakashaya* are beneficial for all *dhatu* by improving strength of all *dhatu* including *mamsa* and its *upadhatu*. *Acharya Chakrapani* had mentioned that number 10 in each group is not restrictive but suggestive and as such other drugs having similar properties and actions may also be included wherever necessary. The FCR (food conversion ratio) values reveal a significant reduction in the trial group as against that of the control, indicating better performance of the herbal drugs. In spite of slight fluctuations of morphological and physiological parameters observed during the investigation, an overall view of all the parameters reveal a significant contribution of the herbal drugs in weight promotion, reaffirming the classical concepts well documented in Ayurvedic literature.

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