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Study of Biochemical and Anthropometric Variables among Pancagavya and Non-Pancagavya Diet Population: A Cross-Sectional Comparative Study

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Abstract- *Background:* Diseases negatively affect people's work performance, joy in life, emotional and physical health, quality of life, and spiritual well-being. The pancagavya (five cow derivatives) diet based on the consumption of five cow derivatives like milk, curd, ghee, urine and dung from Bos indicus cow not only helps to provide physical health but also useful in other aspects of life.

Objective: To study the biochemical and anthropometric variables among the pancagavya diet population.

Materials and method: Both male and female sample size 80 with an age range between 20 to 80 years were recruited from different states of India. The current study is between the pancagavya diet and non-pancagavya diet groups and had more than two years in their diet.

Keywords: *pancagavya diet, non-pancagavya diet, bhramari time, health.*

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Study of Biochemical and Anthropometric Variables among Pancagavya and Non-Pancagavya Diet Population: A Cross-Sectional Comparative Study

Impact of Panchagavya Diet on Health

Neeraj [α], Itagi Ravi Kumar [σ], Dwivedi Krishna [ρ] & Pandey Mangesh [ω]

Abstract- Background: Diseases negatively affect people's work performance, joy in life, emotional and physical health, quality of life, and spiritual well-being. The pancagavya (five cow derivatives) diet based on the consumption of five cow derivatives like milk, curd, ghee, urine and dung from Bos indicus cow not only helps to provide physical health but also useful in other aspects of life.

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Result: Pancagavya diet group had significantly less random blood glucose levels and had no change in hemoglobin level compared to the non-pancagavya diet group. Pancagavya diet group have more bhramari (humming honey bee sound produced at the back of the throat during the practice time) and respiratory rate with exponential significance, less pulse rate with highly significant, and was having lesser blood pressure compared to the non-pancagavya diet group.

Conclusion: In the biochemical and anthropometric variables studied pancagavya diet group had a better healthy lifestyle compared to the non-pacagavya diet group.

Keywords: pancagavya diet, non-pancagavya diet, bhramari time, health.

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I. Introduction

Health is a positive concept accentuating social and personal assets as well as physical and psychological aptitudes. In a healthy condition, an individual can satisfy needs and deal with interpersonal, social, biological, and physical environments. Therefore, it is a resource for every day [1]. In the perspective of understanding health, it is required to focus on the concept of global health. It is an area for study, investigation, and practice that places precedence on refining health and attaining justice of health for all people internationally. Global health emphasizes worldwide health issues, causes, and solutions, includes numerous corrections within and beyond the health sciences and indorses interdisciplinary association [2]. In addition to health, quality of life involves the standard of living, the quality of housing, and the neighborhood in which one lives, job satisfaction, and many other factors. According to the World Health Organisation (WHO), health is defined as a "state of complete mental, physical, and social well-being and not only the absenteeism of disease or disability. Health brings "broadness"- nothing is missing from the person; it brings "proper functions"-everything is working proficiently [3]. Biochemical and anthropometric variables are directly connected to health. For Cardiovascular Disease (CVD), diabetes is one of the cause. Recent decades have seen a striking rise in diabetes dominance across the globe [4].

According to the World Health Organization (WHO), the global prevalence of anemia is 24.8%, which means about 1.62 billion people worldwide [5]. A decrease in the level of hemoglobin is associated with reduced health-related quality of life, congestive heart failure, and increased mortality in chronic kidney disease [6]. The previous studies has described that bhramari (humming bee breath) is a yoga practice, in which subjects should sit in any meditative posture, inhale through both nostrils, and while exhaling, produce the sound of a humming bee. More the bhramari timing, the more will be the lungs capacity [7]. The effect of pulse rate is also measured at the time of diagnosis. High pulse rate, at the time of diagnosis, is strongly associated with cardio related risks [8]. For the person's

health condition and physiological stability, respiratory rate also provides information. An abnormal respiratory rate is a strong pointer that a health crisis is about to happen [9]. Blood pressure is the pressure exerted by blood on the walls of blood vessels while flowing. Globally, the cause of death is high blood pressure, and also it is the second foremost cause of debility next to childhood malnutrition. More than 80% of the adults are at threat from their blood pressure [10].

According to modern science, the gross (physical) body is made up of packets of energy. The ancient indian scripture taittiriya Upanishad has mentioned that the physical body is made of Annam, and the Annam is called food, which consists of five elements (earth, water, space, air, and fire). The yogic diet mentioned in Katha Upanishad and Hatha yoga scriptures consists of cow milk, cow ghee, sprouts, fruits, which is easy to digest and helps to maintain the physical and mental health. The Bhagavadgita highlights three categories of food tamasika (which is stale, tasteless, stinking, cooked overnight and impure), rajasika (that are bitter, sour, saline, over-hot, pungent, dry and burning), and satvika (that increase vitality, energy, vigour, health, joy and cheerfulness) based on the characteristics of food and its influence on human personality. The quantity of food, place, time, the mental state also contributes equally to maintain positive health [11]. Medical research centers emphasize lifestyle modification consisting of diet, normalization of body weight, and aerobic exercise as factors in treating non-insulin-dependent diabetes mellitus (NIDDM). Diet and lifestyle modification can be in controlling non-insulin-dependent diabetes mellitus (NIDDM) and reducing risk factors linked with macrovascular complications [12].

The other diet known as the pistachio diet also improved endothelial function, blood glucose level, some indices of inflammation, and oxidative status in healthy young men. Studies have also shown that frequent nut consumption decreases the risk of coronary artery disease [13]. A low-carbohydrate ketogenic diet (LCKD) has also shown beneficial effects in patients with type 2 diabetes, including reducing anti-diabetic medication dosage [14]. Hemoglobin determination is considered as a screening index valuable in describing various degrees of iron deficiency anemia. Dietary factors play a role in the growth of iron deficiency [15]. A Diet of calorie consisted of moderate carbohydrate, high protein, and rich in vitamins with a high amount of vegetables and fruits can increase the hemoglobin level [16]. The study also shows; changes in anthropometric variables like body weight, hip circumference, and waist circumference due to specific dietary intake [17]. There is an intensive investigation of the relationship between diet and blood pressure in recent years. A vegetarian diet shows lesser BP values in hypertensive subjects [18]. The diet approach is recommended to lower blood pressure. The diet improves cardiovascular risk factors and beneficial in increased cardiometabolic risk [19]. The dietary approach to stop hypertension shows a high reduction in blood pressure and improvement in autonomic and vascular functions [20].

Pacagavya, as given in Ayurveda, consist of five substances obtained from cow namely, urine, dung, milk, ghee, and curd [21], and this diet is called as a pancagavya diet (PD). The Bos indicus (Indian) cow is known as kamadhenu (divine bovine-goddess/cow of plenty), signifying its nourishing nature, similar to a mother. According to the Indian scripture, The Indian sage maharshi vashistha served the divine kamadhenu cow, and Indian sage maharshi dhanavantari offered a wonderful medicine pancagavya to humanity [22]. Many formulations mentioned in Ayurveda describe the use of pancagavya components either as a single ingredient or in combination with drugs of herbal, animal, or mineral origin [21]. The cow milk consists of essential nutrients that are good for health, such as vitamins A, B, C, carotenes, and proteins. It contains the low calorific value and less cholesterol. It is a good animator for human health, easily digestible, and it also plays a bio-protective role [22].

Cow curd is the removal of three humors of the body and a blood purifier. It is beneficial for gastrointestinal disorders, piles, and blood-related problems. It is one of the most health-giving among all food items. In a non-drug manner, it helps to manage infections as it is an efficient anti-infection. Buttermilk and cow curd helps to control the growth of harmful microorganisms [23]. Cow's ghee enhances the body's resistance to infections, intelligence, eyesight, voice quality, and memory. It is for cholesterol and a heart patient as well as it is an anti-aging agent. It purifies the blood to an extent, and it also improves physical and mental health [23]. Ayurveda mentioned the formulation of pancagavya ghee, which is useful against anemia, fever, inflammations, and liver disorder [21]. Cow urine is used to remove the blockage in arteries, used for arthritis, psoriasis, eczema, diabetes, heart attack, prostrate, fits, piles, migraine, ulcer, acidity, constipation, gynecological problems, nose and ear problems [24]. Recently cow urine has been granted U.S. Patents (No. 6896907 and 6410059) for its use along with antibiotics for the fight against cancer and to control bacterial infections [25]. Cow urine helps to enhance immune responses in the body. Several elements in the body can be balanced by cow urine. Total salts present in cow urine are 24 in numbers [23]. In treating diseases like respiratory diseases, chronic renal failure, hepatitis A, B, and C, urological disorders, asthma, and cancer, cow urine plays an important role. It also acts as a disinfectant against many diseases like various kinds of allergies, acne vulgaris, scabies, eczema, and psoriasis [26]. In ancient times cow dung was widely used as fertilizer. Goumayarash is used as a skin tonic and useful in many skin related disorders like

gangrene, psoriasis, eczema. The properties which cow dung includes are antibacterial, antifungal, and antiseptic [23].

II. Materials and Methods

Pancagavya diet (PD) group and non-pancagavya diet (NPD) group were recruited from Delhi, Haryana, and Rajasthan states of India, and its demographic details are given in table 1. The data for both the groups were collected between the period of January 2020 and February 2020. The sample size was calculated by using G-power software; based on; the previous study, the sample size was 76 with alpha 0.05, power 0.95, effect size 0.84 [27]. The assessments of the two groups were based on people adhering to PD and NPD for more than two years were considered. People with psychiatric ailments underwent any recent surgery, infectious disease, and female under menstruation and pregnancy were excluded from the study. Group of PD was directly or indirectly consumers of Bos indicus cow's products mainly of milk, curd, and clarified butter (ghee), cow urine, and cow dung. Non-pancagavya diet group was consumers of NPD diet, including buffalo, jersey cow, or any other animal's milk, ghee, curd, and grains produced by UREA/DAP and other pesticides more than two years are considered. In the present study biochemical variables, blood glucose, hemoglobin, and anthropometric variables bhramari time, pulse rate, respiratory rate, and blood pressures are measured. Bhramari (breath-holding time is a yoga practice, in which subjects sits in any meditative posture, inhale through both nostrils, and exhale, produce the sound of a humming bee) [7]. Data analysis was done by using JASP software with Shapiro–Wilk test for normality, and independent sample t-test was performed.

III. Result

The result showed that there was a significant difference between the pancagavya diet group compared to the non-pancagavya diet group for blood glucose ($p<0.05$), but there is no significant difference between both groups ($p<0.975$) in levels of hemoglobin as shown in table 2. For anthropometric variables, there is a significant difference in bhramari time ($p<0.001$), pulse rate ($p=0.02$), respiratory rate ($p<0.001$), systolic blood pressure ($p<0.01$), and for diastolic blood pressure ($p<0.05$).

IV. Discussion

The random blood glucose level used as a bio-marker showed a significantly lower in the pancagavya diet subjects than the subjects consuming non-pancagavya diet. The bhramari time with exponential significance, pulse rate with the highly significant and respiratory rate with exponential significance in PD group compared to the NPD group. The Subjects following PD had less measurement in both systolic and diastolic blood pressure compared to NPD. These indicate that the PD group have an opportunity for a better life-style, which comprises physical, mental, and spiritual well-being. The pancagavya have much application like in treating many diseases and to increase the body resistance to fight diseases medicines prepared from panchagavya are effective [22], therapeutic benefits of cow urine in managing cancer [27], practical application of pancagavyha products in the field of agriculture, to rejuvenate the soil health [24], based on the synergistic and systematic harnessing of energies from cows, plants, and earth [22], pancagavya ghrita, is also one of the formulations mentioned in Ayurveda which is prepared with all five components of panchagavya viz cow milk, ghee, urine, dung and curd in equal proportions useful for rejuvenation [21]. As the side effects of antibiotic medicine have harmful, one need to look into new therapeutic approach like panchagavya to remove diseases and to control infections.

V. Conclusions

Pancagavya diet group had less random blood glucose level, and have more bhramari time, less pulse rate, respiratroy rate, and blood pressure. Pancagavya diet had shown a more positive impact on health compared to the non-pancagavya diet.

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Conflict of interest
None.

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Table 1: Demographic details

Particulars		PD	NPD
Number of subjects		40	40
Age(year) mean±SD value		42.12±13.66	42.22±16.17
Gender	Male	29	29
	female	11	11
Occupation	Agriculture	29	24
	Job	1	4
	Business	5	3
	Student	1	5
	Housewife	2	3
	Others	2	1
Diet (from years)	2 years	5	0
	3 years	6	1
	More than 5 years	29	39

Legend: PD- Pancagavya diet.

NPD-Non-pancagavya diet.

Table 2: Result of statistical analysis

Domain	PD Mean±SD	NPD Mean±SD	T-value	*p*-value	Cohen's d
Biochemical variables					
Blood glucose (mg/dl)	110.63±20.08	135.34±63.08	2.361	0.021*	0.528
Hemoglobin (gm/dl)	13.55±1.90	13.52±2.08	0.062	0.975	0.014
Anthropometric variables					
Bhramari time (sec)	20.17±6.49	12.92±5.67	5.315	<0.001***	1.188
Pulse rate (bpm)	76.92±4.99	83.37±11.65	3.218	0.002**	0.720
Respiratory rate (cpm)	13.97±3.39	18.22±3.97	5.141	<0.001***	0.720
Sys. BP(mmhg)	118.65±7.67	127.35±15.67	3.152	0.002**	0.705
Dia. BP(mmhg)	78.40±6.93	82.45±10.20	2.077	0.041*	0.464

Legend: PD- Pancagavya diet.

NPD-Non-pancagavya diet

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None

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