

## STUDY OF SEASONAL VARIATIONS IN DIFFERENT PRAKRITI PERSONS WITH SPECIAL REFERENCE TO SERUM UREA

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### ABSTRACT

In the universe everything is changing at every moment. Planets are also changing their position with time at a regular interval of time. Movement of earth is the main reason behind the seasonal variation on the earth. These seasonal variations affect our body functions up to some extent. Awareness about these seasonal variations can help the maintenance of health in healthy individuals, whereas unawareness & carelessness about these variations results into different types of seasonal illness. Different types of *prakriti* (personality) described in Ayurveda have different level of immunity in their body. Keeping these facts in mind we planned to study about effect of seasonal variation in different *prakriti* persons by taking different types of the physiological parameters. Serum urea is also one of them. During study of 70 young healthy volunteers it was observed that, there was a statistically highly significant change in the serum urea concentration in three different *ritu* (*seasons*) in different *prakriti* individuals. In *Shishir ritu* (Jan-Feb) maximum/higher level (mean) of serum urea and in *Greeshma ritu* (May-Jun) minimum/lower level (mean) of serum was observed.

**KEYWORDS:** Prakriti, Seasonal Variation, Serum Urea

### INTRODUCTION

#### Seasons

Seasons are the division of time in a year. Six Seasons (*Ritu*) have been described in Ayurveda (*Shishir, Vasant, Greeshma, Varsha, Sharad, Hemant*). Each season has two months<sup>1</sup>. Ayurveda explains that the external seasons exist because of the solar and lunar systems. The same seasonal phenomenon is found inside the body of each human being living in this world<sup>2</sup>. The internal solar and lunar channels i.e. *Tridosha*, reflect the phenomenon and give the internal seasons. Most people know the seasons, but few of them know their effects<sup>3</sup> on the body & mind and their prevention. Internal environment of human being i.e. Homeostasis<sup>4</sup>, as well as the various components of blood<sup>5,6,7</sup> such as serum urea, serum creatinine<sup>8</sup>, serum cholesterol etc are also get affected due to the seasonal variation.

#### Prakriti

According to Ayurveda, each & every individual is unique. Their size and shape are different, even their physiological and psychological characters & behaviours are also different. This is because they have different proportion of *pancha-mahabhutas, doshas* (*vata, pitta & kapha*), *tri-gunas* (*satva, raja & tama*) at the time of birth which decides their constitution<sup>9</sup>. Once this constitution is set, it is permanent for that individual. These individualistic features are the manifestation of *Prakriti* (Personality). Seven types of *prakriti* has been described in Ayurveda on the basis of physiological predominance of *vata, pitta* and *kapha dosha*. They are *vataja, pittaja, kaphaja, vata-pitta, pitta-kapha, kapha-vata* and *tridoshaja / samadoshaja*<sup>10,11,12</sup>. Different type of the manas (psychological) *prakriti* has also been described but here we have taken *vata, pitta* and *kapha* predominating *prakriti*. *Prakriti* can never be changed throughout

the life but it's formation and development can be influenced by certain factors like climate, season, time factor, age, race, familial inheritance etc<sup>13,14</sup>.

### Serum Urea

Urea is an important constituent of blood which is formed by the metabolism of protein. During the metabolism of protein in the body, the liver creates ammonia. This ammonia is broken down into a by-product called "Urea". Kidney filter excess urea into the urine and in sweat, but some amount of urea goes into the blood stream as Serum Urea. A normal serum urea level is an indicator that protein in the body is being metabolized properly. Normal serum urea level in the healthy adults is 20-40 mg/dL<sup>15</sup>.

The urea level in women and children are often lower than in men because they metabolize protein at a faster rate. The urea level in the elder individuals may be slightly higher than that of a healthy adult. This is because as people age, their renal functions tend to decrease in efficiency. Serum urea concentration is important to determine whether the kidney and liver are functioning correctly or not. A high level of serum urea means the kidneys are not filtering properly. If a patient presents a low serum urea level, it indicates trouble with the liver.

## MATERIAL AND METHODS

The present study has been done in young healthy individuals. For the purpose of present study some parameters were taken into consideration. Here we are presenting the variation in serum urea in different seasons (*ritu*) in different *prakriti* individuals. **70 subjects** were participated in the study, regularly. Out of which 27 were female and 43 were male. Their age were ranging from 18 to 30 years. Subjects were not using any medication. They were non-smokers and not addicted to any bad habits which interfere in physiological functions during study. Most subjects were students spending average time on sports or daily living activities; none of them were extreme athletes or extremely active in outdoor activities.

### Study Design

For the purpose of present study, one calendar year has been divided into three main seasons-*shishir ritu* as **S1** (Jan-Feb), *greeshma ritu* as **S2** (May-June) and *sharad ritu* **S3** (Sep-Oct). Experiments were started in the month of January-February (*shishir ritu*), and all measurements were repeated with the same subjects in the month of May-June (*greeshma ritu*) and September-October (*sharad ritu*) to assess the seasonal influence on various *prakriti* individuals.

Subjects were screened to understand their health status by using standard proforma<sup>5</sup> to exclude the persons who are suffering from any chronic illness. During study period if any volunteer suffered from any minor/seasonal health problems, their blood sample for the examination was taken after one week or when they became free from illness.

*Prakriti* of the subjects were determined by the proforma<sup>5</sup> as described in various classics of *Ayurveda* and were categorized into 1.**vataja** (*vata-pittaja* and *vata-kaphaja*), 2.**pittaja** (*pitta-vataja* and *pitta-kaphaja*) and 3.**kaphaja** (*kapha-vataja* and *kapha-pittaja*) *prakriti*.

For all the biochemical parameters regarding this study, 5ml. of venous blood was collected from the subjects. Subjects were visited in the Kriya Sharir Dept. for the collection of blood sample. Serum was separated from the blood. Separation of serum was done by centrifuging the blood sample at 3000 r.p.m. for 5-6 min. and preserved in deep fridge at -40°C till the estimation done in Dept. of Kriya Sharir, Faculty of Ayurveda, Institute of Medical Science, Banaras Hindu University, Varanasi.

## OBSERVATION AND RESULT

Prakriti Group	Serum Urea (mg/dl) Mean $\pm$ SD			Within Prakriti Group Comparison Paired t-Test		
	S1	S2	S3	S1 - S2	S1 - S3	S2 - S3
Group 1 <b>V</b> (n=20)	31.193 $\pm$ 8.464	23.754 $\pm$ 5.428	25.15 $\pm$ 6.59	7.439 $\pm$ 7.712 t = 4.313 p < 0.01 <b>(H.S.)</b>	6.038 $\pm$ 7.787 t = 3.468 p < 0.05 <b>(S.)</b>	-1.400 $\pm$ 4.224 t = -1.483 p > 0.05 <b>(N.S.)</b>
Group 2 <b>P</b> (n=20)	28.456 $\pm$ 7.921	23.120 $\pm$ 5.433	22.483 $\pm$ 5.364	5.336 $\pm$ 5.113 t = 4.667 p < 0.01 <b>(H.S.)</b>	5.973 $\pm$ 7.468 t = 3.577 p < 0.05 <b>(S.)</b>	0.637 $\pm$ 5.746 t = 0.496 p > 0.05 <b>(N.S.)</b>
Group 3 <b>K</b> (n=30)	26.651 $\pm$ 7.153	21.770 $\pm$ 4.956	21.856 $\pm$ 5.185	4.881 $\pm$ 5.760 t = 4.641 p < 0.01 <b>(H.S.)</b>	4.795 $\pm$ 6.121 t = 4.290 p < 0.01 <b>(H.S.)</b>	-0.085 $\pm$ 5.426 t = -0.086 p > 0.05 <b>(N.S.)</b>
Between <i>Prakriti</i> comparison One-Way ANOVA	F = 2.05 p > 0.05 <b>(N.S.)</b>	F = 0.94 p > 0.05 <b>(N.S.)</b>	F = 2.13 p > 0.05 <b>(N.S.)</b>			
Post-Hoc Boneferroni test Significant pairs	-	-	-			

This study reveals statistically highly significant change of the S. Urea concentration between the S1 (31.193 mg/dl) vs S2 (23.754 mg/dl) and significant change between S1 (31.193 mg/dl) vs S3 (25.150 mg/dl) in *vata prakriti* persons. Statistically not significant change was also observed between S2 (23.754 mg/dl) and S3 (25.150 mg/dl) in *vata prakriti* persons.

In *pitta prakriti* persons highly significant change of S. Urea concentration was found between S1 (28.456 mg/dl) and S2 (23.120 mg/dl) and significant change between S1 (28.456 mg/dl) and S3 (22.483 mg/dl). Statistically not significant change was also seen between S2 (23.120 mg/dl) and S3 (22.483 mg/dl) in *pitta prakriti* persons.

Highly significant change of S. Urea concentration was observed among S1 (26.651 mg/dl) vs S2 (21.770 mg/dl) and S1 (26.651 mg/dl) vs S3 (21.856 mg/dl) in *kapha prakriti* persons, whereas statistically not significant change was observed between S2 (21.770 mg/dl) and S3 (21.856 mg/dl) in *kapha prakriti* persons.

Intergroup comparison of *prakriti* via one way ANOVA and Post-Hoc Boneferroni test shows statistically not significant change of S. Urea concentration in all seasonal groups.

## DISCUSSIONS

S. Urea concentration showed statistically significant change in all *prakriti* groups between *shishir*(S1) vs *greeshma*(S2) and *shishir*(S1) vs *sharad*(S3) *ritu*. The mean of S. urea was observed highest (nearer to upper normal limit) in *shishir*(S1) *ritu* and lowest (nearer to lower normal limit) in *greeshma*(S2) *ritu* in all *prakriti* groups. It may be hypothesized that it is due to the influence of *kapha* in respective seasons.

Along with that excessive intake of oily & fatty diet, rich protein diet like pulses, egg, meat etc. and less intake of water, may also be the reasons behind the highest S. urea level in *shishir ritu*. So it may be advisable to take appropriate amount of such diet and more water i.e. Luke warm water in *shishir ritu*.

## CONCLUSIONS

The present study provides the scientific data to validate the *Ayurvedic* concept in respect to season and *prakriti*. It may be due to the influence of season (*ritu*) on body humors (*vata*, *pitta* and *kapha*). *Tridoshas* are responsible for maintenance of physiological functions of the body. Any variation in these body humors leads to the change in the physiological parameters. Certain seasons make more impact on certain *prakriti* group individuals, because season favours accumulation (*sanchaya*), exacerbation (*prakopa*) and pacification (*shamana*) of *doshas*. Seasonal variation also affects the physiological parameter like serum urea level of each *prakriti* individuals. Serum Urea concentration shows statistically highly significant change between *shishir* vs *greeshma ritu* and significant change between *shishir* vs *sharad ritu* in all *prakriti* groups. The mean of serum urea was observed maximum (nearer to upper normal limit) in *shishir ritu* and minimum (nearer to lower normal limit) in *greeshma ritu* in all *prakriti* groups.

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