



IMPACT OF *RITU* (SEASON) ON BLEEDING TIME AND CLOTTING TIME IN BLOOD ACCORDING TO *PRAKRITI* (AYURVEDA BODY CONSTITUTION): AN OBSERVATIONAL STUDY

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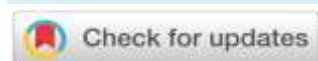
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ABSTRACT

background-The *Prakriti* (constitution) and *Ritu* (season) are extraordinarily connected as they share many common and mutual factors. *Rakta Dhatu* (blood) has been considered to be the most vital among the seven tissues since it is mentioned as *Pranayatana* (seats of life) among the ten seats of *Prana* (life). The present work has been planned to study the effect of seasons on bleeding time and Clotting time of blood of different body constitutions. **Aim:** To assess the seasonal influence on the various *Prakriti* individuals with special reference to Bleeding Time and Clotting Time. **Material and Methods-** 60 Healthy volunteers of age between 18 to 40 years were randomly selected. *Prakriti* was determined and characterized in Different types *vata*, *pitta*, *kapha*, *vatpittaj*, *Pitta Kaphaj*, *pittavataj*, and *kapha pitta*. The experiment was performed in the *Prokop kaal* (aggravation time) of *Vata*, *Pitta*, and *Kapha* dosha i, e in the month of June-july (*Varsha Ritu*)-a season I, September-October (*Sharada Ritu*)- season II and February -march (*Vasant Ritu*)-season III respectively on the same subjects. Bleeding time was estimated by Duke Method and clotting time was estimated by the capillary tube method. Data was gathered and statistical analysis was done. **Conclusion-** It may be concluded that seasons influence the aggravation, accumulation, and pacification of humors, which might affect the functions in various constitutions.

Keywords: constitution, season, bleeding time, clotting time, *Dosha*.

INTRODUCTION

Ayurveda is an ancient medical science. The *Prakriti* (constitution) and *Ritu* (season) are extraordinarily connected with each other as they share many common and mutual factors. Naturally, the impact of the season on the *Prakriti* is unavoidable. *Vata*, *Pitta*, and *kapha* are responsible for the integrity of the human body and govern the entire system^(1,2). Ayurvedic literature emphasizes the *ritucharya* (Season wise regime) and greater significance is given to diet and exercise. According to exacting season, time of vitiation of *doshas* as per the season, and time of pacification of *doshas*, Ayurveda mentions six types of seasons, i.e., *shishira*, *basanta*, *greeshma*, *varsha*, *sharad*, and *Hemanta*.⁽³⁾ They show different features in their characteristics specially in their *prakop kala* (aggravation time). Individuals of different *Prakritis* show season-wise variations in *Rakta dhatu* (blood tissues). *Prakop Kala* of *Vata*, *pitta* and *kapha* are *Varsha* (monsoon), *Sharad* (autumn), and *Vasant* (spring) respectively. As one can't avoid *Kala* (season), its variations will definitely reflect Upon the individual and if he knows about his *Prakriti* (Body constitution) and relation with the *Kala* (season), he will try to guard himself. The particular diseases of that prominent *Dosha* are common in that season only. So, all these changes are nature's adjustment, and the treatment, to keep the *Doshas* as well as the body healthy. But for that, one must know the effects of *Ritu* (season) on *Prakriti* (genetic constitution), and to adjust his day-to-day behavior according to the changes in *Ritus* (season) to keep the body healthy.

Ayurveda Acharyas have given so much importance to *rakta dhatu* (blood tissues). Although there is three *sharira dosha* at times blood is also considered as fourth *Dosha*, since *rakta dhatu* is the prime carrier of vitiated *pitta* in the whole of the body. *Rakta dhatu* (Blood) is a significant *dhatu* among seven *dhatu*s in Ayurveda. *Rakta Dhatu* has been considered to be the most vital among the seven tissues since it is mentioned as *Pranayatana* (seats of life) among the ten seats of *Prana* (life)⁽⁵⁾. *Rakta* plays an important role in the sustenance of life⁽⁶⁾. A fast decrease in environment temperature may lead to different

physiological changes in the body like increased blood pressure, headache, and decrease in appetite. If *doshas* are in a balanced stage, then they are called normal *prakriti* of the particular individual which is decided by divine power from the womb of the individual. Hence, *Prakriti* plays an important role in the manifestation, prognosis, and treatment of diseases. If we adapt to the proper diet and lifestyle and at the same time undergo a cleansing process as per the *prakop kala*. Hence, *Prakriti* plays an important role in the prognosis and treatment of diseases. By understanding the charter of an individual, we can counsel which type of foodstuff and liquid and what type of job and exercise are appropriate for him. During *sharad ritu* (autumn) blood becomes naturally impure. The defect of blood means abnormality in its normal composition, diminution, or aggravation. Blood becomes thick and does not come out or comes out in small quantities on bloodletting during cloudy and cold weather.

Bleeding time (BT) can be defined as the time interval between the movement when bleeding starts and the movement when the bleeding stops due to the formation of a temporary platelet plug. Clotting time (CT) is the time interval from the onset of bleeding to the formation of the first fibrin thread. The normal value of clotting time is 5 to 8 minutes⁽⁷⁾. Study in 2012 showed that Adenosine diphosphate (ADP) induced maximal platelet aggregation was found high in *Vata Pitta Prakriti* individuals. *Tridosha* undergoes functional natural phases such as *Sanchay*, *prakop*, and *prasham* according to *Ritu*. The concept of *Shadkriyakala* has been mentioned by *Acharya sushruta*, according to which one gets a chance to Stop *dosha's* vitiation at every step of it. The relationship between bleeding time, clotting time, and blood group are important in certain clinical conditions such as epistaxis, surgery, and thrombosis. Even after a thorough review of the literature, we find limited research studies related to this topic. The present work has been planned to study the effect of seasons on bleeding time and Clotting time of *rakta dhatu* of different *Sharir Prakritis*. So, the study has been entitled as- "Impact of *Ritu* (season) on Bleeding time

and Clotting time in blood according to *prakriti* (Ayurveda Body constitution): An Observational Study"

Aim: To assess the seasonal influence on the various *Prakriti* individuals with special reference to Bleeding Time and Clotting Time.

Material and Methods- For the purpose of the present study, 60 Healthy volunteers of age between 18 to 40 years were randomly selected. For the determination of *prakriti*, self-made "prakriti examination proforma" made on the basis of lakshanas (features) by Acharya Charak⁽⁸⁾ sushruta⁽⁹⁾, and vagbhata⁽¹⁰⁾ mentioned in Ayurvedic samhitas has been used. *Prakriti* was determined and characterized in Different *Prakrities* as *vata*, *pitta*, *kapha*, *vatpittaj*, *Pitta Kaphaj*, *pittavataj*, and *kapha pitta*. Subjects were not using any medication and were nonsmokers and were not addicted to any bad habits which interfere with physiological functions. The volunteers were provided with detailed information concerning the purpose and methods used in the study.

Study Design: The experiment was performed in the *Prokop kaal* (aggravation time) of *Vata*, *Pitta*, and *Kapha dosha* i, e in the month of June-july (*Varsha Ritu*)-a season I, September-October (*Sharada Ritu*)-season II and February -march (*Vasant Ritu*)-season III respectively on the same subjects. Bleeding time was estimated by Duke Method and clotting time was

estimated by the capillary tube method. Data was gathered and statistical analysis was done. Statistical analysis was done by using MS excel. student's paired t-test has been applied between seasons-wise observed levels.

Observation and result-

The present study showed that,

1. Out of 60 people, 36 were female and 24 were male (table no-2).
2. Females were having higher Bleeding time and clotting time than males.
3. Bleeding Time has been found highest in sharad ritu (174 sec) in Pitta *Prakriti* individuals and lowest in the Vasant ritu (87 sec) in kapha *Prakriti* individuals (table no-3).
4. Clotting time has been found highest in sharad Ritu (467 sec) in Pitta *Prakriti* individuals and lowest in Vasant Ritu (245 sec) in kapha *Prakriti* individuals (table no-4).
5. For bleeding time values, there was a highly significant difference observed between Varsha Ritu (season I) vs sharad Ritu (season II) and sharad Ritu (season II) vs Vasant Ritu (season III). There is a non-significant difference between Varsha Ritu (season I) and Vasant Ritu (season III). (Table no-1)
6. For clotting time values, there was no significant difference observed within seasons. (Table no-1)

Table no-1 shows variations of BT and CT among different seasons-

Parameters	Season-I (Varsha ritu) Mean±SD	Season-II (Sharad Ritu) Mean±SD	Season-III Mean±SD	Season I vs Season II (paired t- test)	Season II vs Season III (paired t-test)	Season I vs Season III (paired t-test)
Bleeding Time (sec)	103.14±15.99	145.57±21.09	93.71±8.07	t=4.597 P=<0.001 (HS)	t=4.270 P=<0.001 (hs)	t=0.016 P=>0.05 (NS)
Clotting Time (sec)	302±37.41	384.28±57.84	270.57±20.60	t=0.0001 P=>0.05 (NS)	t=0.0001 P=>0.05(NS)	t=0.0025 P=>0.05(NS)

DISCUSSION

- As per Ayurvedic science, the human body is composed of Panchabhautika entities (five elements), *indriya* (sense organs), *sattva* (mind),

and *atma* (soul). Different body and mind constitution differs in each aspect. Thus, their variations according to *Ritu* are quite obvious. Hence Ayurveda prescribes seasonal regimens,

daily regimens, regimens according to the constitution, and so on for healthy living. BTCT levels are observed higher in *sharad Ritu* (autumn) than in *Varsha Ritu* (monsoon) and *Vasant Ritu* (spring). It May be hypothesized that *Sharad Ritu* (autumn) is a risk factor for the disease-related to the *Raktavah sansthan* like raktapitta, all types of skin disease, coagulation disease, etc. Significant changes in bleeding time indicate accumulation of *Pitta*. For a bleeding time, the Highest values for *Pitta Prakriti* individuals in *sharad Ritu* may be due to its gunas(characters). By observing various concentrations of BT and CT we may hypothesize that certain seasons are good for certain *Prakriti* and others are not. Due to the heating attribute of *Pitta*, the person having predominant *Pitta Prakriti* are intolerant to heat, has a hot face, is delicate (*Sukumara*), and has fair organs ⁽¹¹⁾. So, *pitta Prakriti* individuals are more prone to *Pitta prakop janit vyadhi* specifically in *Sharad Ritu*.

- Each season has its own peculiarity regarding its atmospheric characters, resulting in an increase in particular rasa (taste) which are responsible for the increase of the same qualities. Hence the same *Dosha* may have an influence on the *Prakriti* (genetic constitution). These characters of the *Ritu/Kala* (season) are responsible for the Vitiation of *Tridoshas* in the same genetic constitution and lifestyle of the same quality. Thus, in every season the atmosphere is changed, according to the changes in the qualities of Universal affecting

subjects mentioned before. These changes are responsible for the changes in characters of *Prakriti* (genetic constitution) normally as well as responsible for creating imbalance or abnormal changes in *Doshas* resulting in disease.

- The reason for Females having higher Bleeding time and clotting time than males are not clear. This might be due to the presence of more amounts of estrogen in females which increases CT and decreases plasma fibrinogen levels. The presence of more amounts of estrogen in females may suppress platelet function and prolong bleeding time. Short BT in the male may be due to enhanced platelet reactivity and aggregation.

CONCLUSION

These results could have substantial medical implications. These descriptions show that, very detailed physiology of blood and its applied aspect have been discussed by ancient Ayurvedic scholars and the scientific explanations in this article may be helpful in its understanding. So, diet and lifestyle should be modified according to season, especially in *Pitta* and *Kapha Prakriti* individuals. Bleeding time measurement showed statistically significant changes in different *Prakriti* individuals in various seasons. So, it may be concluded that seasons influence the aggravation, accumulation, and pacification of humors, which might affect the functions of various constitutions.

Table 02: 04,12,07, 04,16,13 and 04 individuals had *Vata, pitta, kapha, vatpittaj, pittakapha, pittavataj and kaphapittaj* respectively.

No.	<i>Prakriti</i>	Female	Male	Total
1	<i>Vata</i>	02	02	04
2.	<i>Pitta</i>	07	05	12
3	<i>Kapha</i>	04	03	07
4	<i>Vatpittaj</i>	02	02	04
5	<i>Pittakaphaj</i>	11	05	16
6	<i>Pittavataj</i>	08	05	13
7	<i>Kaphapittaj</i>	02	02	04
Total		36	24	60

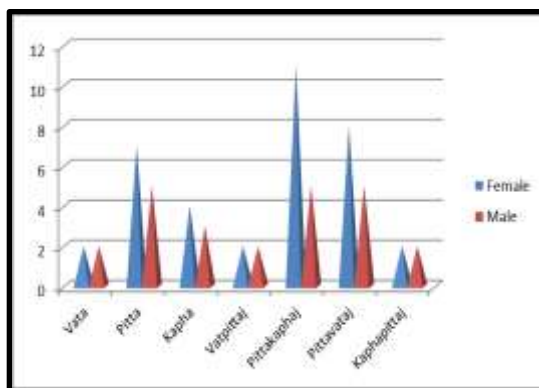


Table 03: average Bleeding time (in a sec) in different Priorities with respect to season

No.	Prakriti	Varsha ritu	Sharad Ritu	Vasant ritu
1	Vata	98	140	89
2	Pitta	133	174	110
3	Kapha	93	113	87
4	Vatapittaj	100	136	90
5	Pitta Kaphaj	102	159	97
6	Pitta vataj	113	164	95
7	Kapha pittaj	83	133	88

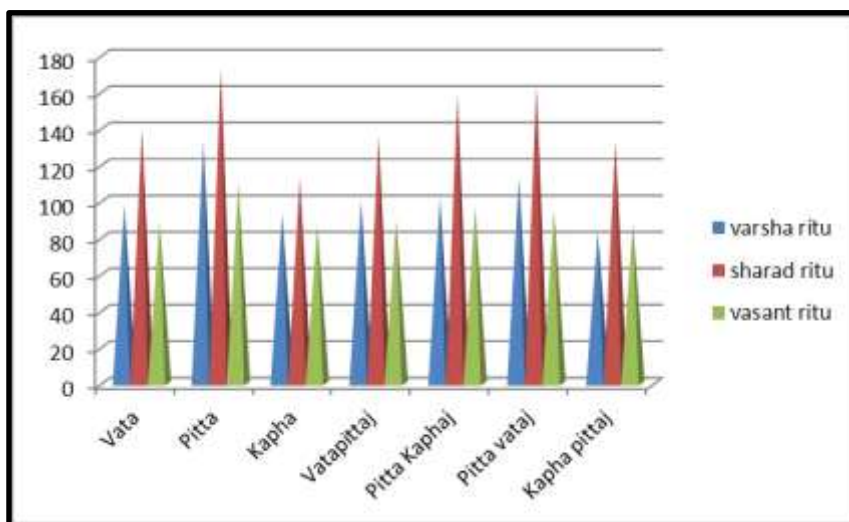
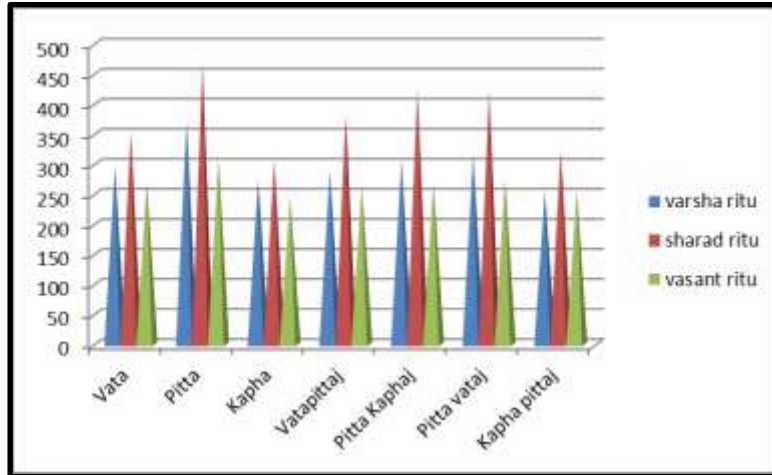


Table 04: average clotting time (in a sec) in different Prakrities with respect to season

No.	Prakriti	Varsha ritu	Sharad Ritu	Vasant Ritu
1	Vata	297	357	270
2	Pitta	373	467	311
3	Kapha	275	308	245
4	Vatapittaj	290	385	265
5	Pitta Kaphaj	307	425	269
6	Pitta vataj	317	423	277
7	Kapha pittaj	255	325	257



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