ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com
Journal DOI: 10.21474/IJAR01

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

A STUDY OF CHANGE IN HIGH DENSITY LIPOPROTEIN (HDL) LEVEL DURING VARIOUS SEASONS IN DIFFERENT *PRAKRITI* (CONSTITUTION) PERSONS.

***Sunil Kumar Chaudhary[1], NarendraShankerTripathi[2].**

1. Medical Officer, Govt. Ayurvedic Hospital Papaura, Chandauli (U.P.).
2. Assistant Professor, Department of KriyaSharir, IMS, BHU, Varanasi (U.P.).

Manuscript Info

Manuscript History:

Received: 15 February 2016
Final Accepted: 23 March 2016
Published Online: April 2016

Key words:
Seasonal variation, HDL, *Prakriti.*

****Corresponding Author***

Dr. Sunil Kumar Chaudhary.

Abstract

Ayurveda described the several regimen to maintain healthy life such as seasonal regimen, daily regimen etc.*Tridosha* (body humors) are the functional unit of body. Physiological functions are dependent on the state of bodyhumors i.e. aggravation, accumulation and pacification. Their aggravation, accumulation and pacification are greatly influenced by the season. Hence, one should adopt proper diet and life style as per the season and one's own *Prakriti* (constitution). This study was designed to know the changes inHDL concentration during various seasons in different *prakriti*individuals.Present study was conducted in 70 healthy volunteers. The study shows certain changes in serum HDL level in different seasons and constitutions. The mean of serum HDL concentration was found maximum in *shishirritu* and minimum in *greeshmaritu* in *pitta prakriti*.It proves the variations of physiological functions in different seasons and constitution.

Introduction:-

Ayurveda is the knowledge for healthy long life. The basic principle followed in the *Ayurvedic* system of medicine is "*SwasthasyaSwasthyaRakshanam"*, which means to maintain the health of the healthy individuals, and secondly "*AturasyaVikaraPrashamanamcha"*, means to cure the diseases of the diseased person[1]. To maintain the health of the healthy individuals, certain regimens have been mentioned in the classics of *Ayurveda* such as *Dincharya* (daily regimen), *Ritucharya* (seasonal regimen) etc.*Ayurveda* mentions six types of *ritu* (seasons), i.e., *shishira, vasanta, greeshma, varsha, sharada* and *hemanta*[2,3]. Seasons affect the state of health[4], physiological entities like *doshas, agni,bala, rasa*[5] etc., daily routine activities and much more. Season is also an important factor during the formation of *Prakriti*(constitution). *Prakriti* of an individual represents the *doshik* predominance state of an individual[6]. Seven types of *prakriti* has been described in *Ayurveda* on the basis of physiological predominance of *vata*, *pitta* and *kaphadosha*[7,8,9]. *Prakriti* of a person is dependent on *shukra* (sperm), *shonita* (ovum), *kala* (season), dietetic regimen, and behaviour of mother, nature of *garbhasaya*(uterus) and *panchamahabhuta*[10]. *Prakriti* plays important role during prognosis and treatment of diseases. By understanding the constitution of an individual, we can advise which type of food and drink should be taken.*AcharyaCharaka* states that blood becomes impure during *sharadaritu* (autumn: Sept-Oct)[11]. Season also affects the homeostasis[12] or the internal environment of human being by affecting or changing the composition of blood (*raktadushti*) and other relevant entities[13] i.e. blood cholesterol, serum urea[14,15], serum creatinine[14] etc. in physiological limits.

Lipids are the important constituents of cell membrane & major source of energy and also present in blood. HDL is the densest lipoprotein. It reverses the cholesterol transport. HDL extracts cholesterol from the peripheral tissues (e.g. aortic wall) and carries the cholesterol to liver for metabolism. Thus the steroid nucleus is removed from the body. It also gives protection against atherosclerosis. That's why it is known as "Good Cholesterol". The normal HDL level is less than 40 mg/dL[16].

Aims And Objectives:-

To evaluate the change in HDL level during various seasons in different *Prakriti* persons.

Material And Methods:-

The present study has been done in 70 young healthy individuals. 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.

Inclusion Criteria:-

- Healthy individuals aged between 18-30 yrs (students of BHU).
- Brief history, general physical examination and necessary systemic examination will be performed to assess their health.
- Only the subject willing to volunteer in the study by giving written consent on the prescribed format will be included.

Exclusion Criteria:-

- Subjects aged less than 18 years or more than 30 years were excluded.
- Subjects not fulfilling the criteria of 'Clinically Healthy' status, as per the proforma were excluded.
- Participant suffered from any diseases/chronic illnesses during the period of study were excluded.

Study Design:-

To assess the seasonal influence on HDL concentration in different *prakriti* persons, one calendar year has been divided into three main seasons-*shishiraritu* as **S1** (Jan-Feb), *greeshmaritu*as **S2** (May-June) and*sharadaritu***S3** (Sep-Oct). Experiments were started in the month of January-February (*shishiraritu*), and all measurements were repeated with the same subjects in the month of May-June (*greeshmaritu*) and September-October (*sharadaritu*).

Subjects were screened to understand their health status by using standard proforma[13] 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[13] 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 the purpose of this study, 5ml. of venous blood was collected from the subjects. Subjects were visited in the KriyaSharir 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 -40^0C till the estimation done in Dept. of KriyaSharir, Faculty of Ayurveda, Institute of Medical Science, Banaras Hindu University, Varanasi.

Observation and Result:-

Comparative study of S. HDL concentration (Table-1) revealed statistically not significant result among S1 (51.379 mg/dl) vs S2 (39.097 mg/dl), S1 (51.379 mg/dl) vs S3 (49.517 mg/dl) and S2 (39.097 mg/dl) vs S3 (49.517 mg/dl) in *vataprakriti* group.

Statistically highly significant changes were observed among S1 (60.974 mg/dl) vs S2 (31.944 mg/dl) and S2 (31.944 mg/dl) vs S3 (55.617 mg/dl). Statistically not significant change was found between S1 (60.974 mg/dl) vs S3 (55.617 mg/dl) in *pittaprakriti* group.

Comparative study of S. HDL concentration showed statistically highly significant changes among S1 (42.972 mg/dl) vs S3 (39.413 mg/dl) and S2 (37.013 mg/dl) vs S3 (39.413 mg/dl). Significant result was found between S1 (42.972 mg/dl) vs S2 (37.013 mg/dl) in *kaphaprakriti* group.

Intergroup comparison of *prakriti* in S1 reveals statistically highly significant change for S. HDL. Statistically not significant changes were found in S2 and S3 among all three *prakriti* groups for S. HDL.

Discussion:-

Highly significant change in S. HDL level in *pittaprakriti* individual was observed between *shishira*(S1) vs*greeshma*(S2) *ritu* and *greeshma*(S2) vs*sharada*(S3) *ritu*, and in *kaphaprakriti* between *shishira*(S1) and *sharada*(S3) *ritu*. It may be due to excessive intake of heavy/oily diet in *shishira* and *sharadaritu*.*Shishira* and

sharadaritu are considered as comparatively healthy seasons that may be due to availability of upper normal range of HDL level. S. HDL concentration was observed lowest (within normal range) in *greeshma*(S2) *ritu* in all *prakriti* groups. S. HDL is "good cholesterol" which prevents arterial diseases and helps in maintaining good health in *shishiraritu*. The significant change of S. HDL (nearer to the lower normal limit in *greeshmaritu*) indicates the accumulation of *vata*. It may be hypothesized that, it is due to the influence of physiological body humors in respective seasons, drastic variation of temperature, life style activities, change in metabolic rates and consuming comparatively low oily & fatty diet and excessive intake of liquid. So it may be advisable to take appropriate amount of balanced diet in *greeshmaritu*.

Tables

Table-1: ComperativeStudy of Serum HDL Concentration

Prakriti **Group**	**SerumHDL (mg/dl) Mean ± SD**			**Within *Prakriti* Group Comparison Wilcoxon Signed Ranks Test**		
	S1	**S2**	**S3**	**S1 - S2**	**S1 - S3**	**S2 - S3**
Group 1 **V** (n = 20)	51.379 ± 23.947	39.097 ± 40.011	49.517 ± 37.726	Z = -1.083 p > 0.05 (N.S.)	Z = -1.195 p > 0.05 (N.S.)	Z = -0.523 p > 0.05 (N.S.)
Group 2 **P** (n = 20)	60.974 ± 22.906	31.944 ± 28.329	55.617 ± 26.950	Z = -2.690 p < 0.01 **(H.S.)**	Z = -0.673 p > 0.05 (N.S.)	Z = -3.138 p < 0.01 **(H.S.)**
Group 3 **K** (n = 30)	42.972 ± 12.455	37.013 ± 32.300	39.413 ± 32.822	Z = -2.027 p < 0.05 **(S.)**	Z = -4.105 p < 0.01 **(H.S.)**	Z = -3.591 p < 0.01 **(H.S.)**
Between *Prakriti* comparison Kruskal-wallis test	X^2 = 9.822 p < 0.01 **(H.S.)**	X^2 = 5.383 p > 0.05 (N.S.)	X^2 = 1.225 p > 0.05 (N.S.)			

Conclusion:-

On the basis of above mentioned facts as observed we can conclude that seasons have different level of impact on our body in different types of the *prakriti* (personality) persons. The present study shows the influence of season on HDL level in different prakriti. The mean of serum HDL concentration was found maximum in *shishiraritu* and minimum in *greeshmaritu* in *pitta prakriti*. Which show the good health in *shishiraritu* and poor health in *greeshmaritu*.Variations (maximum) are observed in *pittaprakriti*individuals in different seasons. It may be due to the effect of season on different types of body constitutions. Aggravation, accumulation and pacification of body humors takes place in respective seasons, which may influence body's physiological functions resulting into variations in HDL level. In last we can say that day and night (*dincharya*), and seasonal regime (*ritucharya*) should be followed for maintenance of healthy life and doses of different drugs may also be determined as per seasons and their *prakriti* in different diseases.

References:-

1. Agnivesh, Charak Sutra 30/26, In K R Srikantha Murthy CharakSamhita (text book with english translation) Vol I, reprint edition, Varanasi, ChaukhambhaOrientalia 2009.
2. Sushruta, Sushruta Sutra 6/6, In Sharma PV. Sushruta Samhita (with English translation of text and Dalhan's commentary along with critical notes) Vol I, Reprint edition, Varanasi, ChaukhambhaVisvabharti 2005.
3. Agnivesh, Charak Sutra 6/4, In K R Srikantha Murthy CharakSamhita (text book with english translation) Vol I, reprint edition, Varanasi, ChaukhambhaOrientalia 2009.

4. Chaudhary SK, Tripathi NS. Effect of Season (Ritu) on Health & Physiological entities described In Ayurveda, Asian Journal of Modern and Ayurvedic Medical Science, Vol-1, Number-1, July 2012.
5. Agnivesh, Charak Sutra 6/6-8, In K R Srikantha Murthy CharakSamhita (text book with english translation) Vol I, reprint edition, Varanasi, ChaukhambhaOrientalia 2009.
6. Sushruta, Sushruta Sharir 4/62, In Sharma PV. Sushruta Samhita (with English translation of text and Dalhan's commentary along with critical notes) Vol I, Reprint edition, ChaukhambhaVisvabharti, Varanasi-2005.
7. Tripathi NS. Concept of formation of prakriti in ayurveda, The Indian Journal of Research Anvikshiki, Vol-5, Number-4 July-August 2011.
8. Tripathi NS. Conceptual Study of Development of Prakriti in Ayurveda, The Indian Journal of Research Anvikshiki, Vol-5, Number-4 July-August 2011.
9. Tripathi NS. Conceptual Study of VataDosha-"TheController of Body", The Indian Journal of Research Anvikshiki, Vol-6, Number-1 Jan-Feb 2012.
10. Agnivesh, CharakViman 8/95, In K R Srikantha Murthy CharakSamhita (text book with english translation) Vol I, reprint edition, Varanasi, ChaukhambhaOrientalia 2009.
11. Agnivesh, Charak Sutra 24/10, In K R Srikantha Murthy CharakSamhita (text book with english translation) Vol I, reprint edition, Varanasi, ChaukhambhaOrientalia 2009.
12. Chaudhary SK, Tripathi NS. Concept of Homeostasis In Ayurveda, The Indian Journal of Research Anvikshiki, Vol-6, Number-4, July-August 2012.
13. Singh PK, Tripathi NS, Byadgi PS. Study of physiological variations in young healthy individuals in different Ritus (seasons) with special reference to Prakriti, Thesis submitted in department of KriyaSharir, Faculty of Ayurveda, Institute of Medical Science, Banaras Hindu University Varanasi, December 2011.
14. Singh PK, Tripathi NS, Byadgi PS. A Study on Effect of Season on Blood Urea and Serum Creatinine in Different Prakriti (Constitution) Individuals, STM Journal, Vol-2, Issue-2, August-2012.
15. Chaudhary SK, Tripathi NS. Seasonal Variations in different Prakriti Persons with special reference to Serum Urea, IJGMP, Vol-2, Issue-3, July-2013.
16. ChaudhariSujit K. Concise Medical Physiology, Reprint edition, New Central Book Agency (P) Ltd. Kolkata 2009.