



## Research Article

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### A CROSS-SECTIONAL SURVEY STUDY TO EVALUATE THE BALA AND VYADHISAHATWA OF AN INDIVIDUAL WITH REFERENCE TO THE TIME OF CONCEPTION

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#### ABSTRACT

Bala (physical strength) and Vyadhikshamatwa (Immunity) play a vital role in maintaining the swaasthya (health) of an individual and preventing the occurrence of any vyadhi (diseases). Immunity is a general concern for people who wish to maintain positive health. Common illnesses frequently hamper an individual's day-to-day activities, disturbing the equilibrium of body and mind. It also signifies that an individual's immunity is less, making him ill frequently. The purpose of this study is to know the role of Balavat Purushe Kale (born during the period of the season when strength is naturally strong) in maintaining the Bala and Vyadhikshamatwa of an individual. A close-ended questionnaire consisting of 12 questions and an open-ended questionnaire composed of 5 questions were created to obtain a range of Bala and Vyadhikshamatwa. In this study, it was observed that the range of Bala and Vyadhikshamatwa of individuals whose Ritu of conception comes under Hemanta (early winter) and Shishira (late winter) was found to be good as compared to other Ritu (seasons). It was also observed that there is an influence of factors like intake of satmya ahara (wholesome food), satwa bala (mental strength), nityasevaniya dravyas (pathya-indicated foods) and intake of shadrasayukta ahara (consumption of all six rasas-taste which includes sweet, sour, salt, pungent, bitter, astringent).

**Keywords:** Bala, Vyadhikshamatwa, Ritu of conception, Immunity

#### INTRODUCTION

Ayurveda aims to maintain the health of healthy individuals and treat if there is any occurrence of disease<sup>1</sup>. So, for the maintenance of the health of healthy individuals, proper bala and vyadhi sahatva are essential. Acharya Charaka explains balavridhhi kara bhavas, which includes balavath deshe janma (born in the geographical region where people are naturally strong) and balavath kale janma (born during the period of the season when strength is naturally strong), sukhaschcha kalayoga (the birth at the time which is conducive to strength), bijakshetra guna sampaccha (excellence of attributes of bija- sperm-ovum), kshetra (uterus), aharasapaccha (suitable and excellent diet), sharirasampaccha (excellence of physique), satmya sampaccha (most suitability of diet and mode of life), satwasampaccha (excellence of satwa), swabhava samsiddhi (natural attainment), youvana (youth), karma (physical activity) samharsha (cheerfulness)<sup>2</sup>. So, the person endowed with these factors is considered to be vyadhisaha, i.e., these people naturally resist disease. He also mentions the concept of trividha bala, such as sahaja bala (constitutional strength), kalaja bala (based on seasons) and yuktikruta bala (acquired by proper food intake and activities) is based on ritu and vaya. In adana kala, bala will be avara and in visarga kala bala will be pravara<sup>3</sup>. Considering the time of conception of an individual, people born in Hemanta (early winter), Shishira ritu (late winter) have pravara bala

(maximum strength), people born in Sharad (autumn) and Vasanta ritu (spring) have madhyama bala, (medium strength) and Varsha (rainy), Greeshma ritu (summer) have avara bala (minimum strength)<sup>4</sup>. Shareerika bala of an individual is assessed by vyayama shakti (capability to perform physical activity)<sup>5</sup>.

Acharya Charaka classified vaya (age) into baala (childhood), madhyama (youth), and jeerna (senile). Baala is till 30 years. From birth till 16 years is aparipakwa dhatu and 17-30 years is vivardhamaana dhatu<sup>6</sup>. Acharya Sushruta classified age into baala, madhyama and vriddha. Madhyamavastha is from 16-70 years. It is further subclassified, in which vriddhi (up to 20 years) and youvana (21-30 years), where bala is pravara.<sup>7</sup>

In the present study, an effort was made to analyse the relation between Balavath kale janma, i.e. ritu of conception during balavat kala; such individuals will have pravara bala. So, in the current study, people belonging to the Vivardhamana dhatu avastha of bala (18-30 years of age) are taken to assess their Bala and Vyadhisahatva.

#### Objectives

- To evaluate the Bala of an individual with reference to the time of conception.
- To evaluate the Vyadhisahatwa of an individual with reference to the time of conception.

## MATERIALS AND METHODS

The study was initiated after receiving the Institutional Ethics Committee Clearance (IEC NO. SKAMCH & RC /IEC/02/2023). Consent was taken from volunteers. The questionnaire was discussed with academics to select appropriate questions. Both close-ended and open-ended questions were distributed to volunteers of both genders aged between 18-30.

**Study design:** Cross-sectional survey study

Sample size to assess Bala and Vyadhisahatva with reference to time of conception - 439

**Sample source/selection criteria:** Students of Sri Kalabyraveshwara Swamy Ayurvedic Medical College, Hospital and Research Centre, Bangalore, Karnataka, India, were selected for the study irrespective of gender, religion and socio-economic status.

**Method of data collection:** The survey was done by giving questionnaires to volunteers aged 17-30.

**Statistical tools:** Appropriate statistical tools are applied after the collection of data.

### Inclusion criteria

- Subjects belonging to the age group 17-30 years
- Subjects who were willing to take part in the survey study

### Exclusion criteria

- Subjects belonging to the age group below 17 years and above 30 years
- Subjects presenting with congenital abnormalities, behavioural disorders, and major disabilities.
- Subjects who were not willing to take part in the survey study.

## OBSERVATIONS

In the present study out of 439 subjects, the subjects whose Ritu of conception falls under Hemanta ritu are 38(8.6%), Shishira ritu are 86(19.5%), Sharad ritu are 49(11.1%), Vasanta ritu are 59(13.4%), Varsha ritu are 55(12.5%), Greeshma ritu 58(13.2%) and Ritu sandhi are 94 (21.4%).

For the assessment of Sharirka bala, three questions were provided to subjects, which included intensity of efforts after climbing particular floors, walking for a certain distance without getting tired and feeling fatigued after doing household work in which grade 5 indicates effort that leads to rapid breathing and sweating, grade 4 indicates effort increasing the respiratory rate and sweating, grade 3 indicates effort above average, grade 2 indicates moderate effort, grade 1 indicates easy attempt. Grade 5,4 indicates avara bala, 3,2 indicates madhyama bala, 1 indicates pravara bala.

Out of 38 subjects whose time of conception comes under Hemanta ritu, subjects who fall under grade 5 are 5(13.1), grade 4 are 9(23.6), grade 3 is 9 (23.6), and grade 2 is 12(31.5). Out of 86 sample size whose ritu of conception comes under Shishira ritu, subjects who fall under grade 5 are 2(2.3), grade 4 are(24.4), grade 3 are 34(39.5), grade 2 are 26(30.2), grade 1 are 3(3.4). Out of 49 sample size whose ritu of conception comes under Sharad ritu, subjects which fall under grade 5 are 0(0), grade 4 is 13(26.3), grade 3 are (32.6), grade 2 is 20(40.8), grade 1(0). Out of 59 sample size whose ritu of conception comes under Vasanta ritu, subjects who fall under grade 5 are 5(8.4), grade 4 are

7(11.8), grade 3 are 23(38.9), grade 2 are 22(37.2), grade 1 are 2(3.3). Out of 58 sample sizes whose ritu of conception comes under Greeshma ritu, subjects who fall under grade 5 are 4(6.8), grade 4 are 18(31.0), grade 3 are 13(22.4), grade 2 are 19(32.7), grade 1 are 4(6.8). Out of the 55 sample size whose ritu of conception comes under Varsha ritu, subjects who fall under grade 5 are 3(5.4), grade 4 are 12(21.8), grade 3 are 16(29.0), grade 2 are 20(36.3), grade 1 are 4(7.2). Out of 94 sample size who come under Ritu sandhi, subjects who fall under grade 5 are 5(5.3%), grade 4 is 33(35.1%), grade 3 is 24(25.5%), grade 2 is 29(30.8%), grade 1 are 3(3.1%).

For assessment of Vyadhi utpadaka pratibandhakatwa, the question was framed regarding the tendency to get ill after indulging in the unwholesome diet for which grade 4 is considered to be more often, grade 3 every time, grade 2 occasionally and grade 1 none. Grades 4,3 indicates avara, grade 2 indicates madhyama, and grade 1 indicates pravara.

Out of 38 subjects whose time of conception comes under Hemanta ritu, subjects who fall under grade 4 are 13(34.2), grade 3 are 25(65.7), grade 2 are 0(0), and grade 1 are (0). Out of 86 subjects whose time of conception comes under Shishira ritu, subjects who fall under grade 4 are 34(39.4), grade 3 are 45(52.3), grade 2 are (2.3), and grade 1 are 5(5.8). Out of 59 subjects whose time of conception comes under Vasanta ritu, subjects who fall under grade 4 are 26(44.0), grade 3 are 31(52.5), grade 2 is 1(1.6), and grade 1 is 1(1.6). Out of 49 subjects whose time of conception comes under Sharad ritu, subjects who fall under 4 are 16(32.6%), grade 3 is 30(61.2%), grade 2 is 1(2%), and grade 1 is 2 (4%). Out of 58 subjects whose time of conception comes under Greeshma ritu, subjects who fall under grade 4 are 18(31.0%), grade 3 are 37(63.7%), grade 2 is 1 (1.7%), and grade 1 is 2 (3.4%). Out of 55 subjects whose time of conception comes under Varsha ritu, subjects who fall under grade 4 are 26(50.9%), grade 3 is 24(43.6%), grade 2 is 0 (0%), and grade 1 is 3(5.4%). Out of 94 sample sizes who come under Ritu sandhi, subjects who fall under grade 4 are 37(39.3%), grade 3 are 51(54.2%), grade 2 is 4(4.2%), and grade 1 is 2(2.1%).

For assessing Vyadhibala virodhitwa, the question was framed regarding the duration required to subside after suffering from any ailment, and here grade 4 denotes that the illness subsides within 3 days without medications, grade 3 denotes that the illness subsides within 3 days with medications, grade 2 denotes that the illness takes a long time to subside with medications and grade 1 denotes that though medications are taken, illness takes a long time to subside. Grade 4 indicates pravara, grade 3 indicates madhyama, and grade 2,1 indicates avara.

Out of 86 subjects whose time of conception comes under Shishira ritu, subjects who fall under grade 4 are 32(37.2%), grade 3 are 46(53.4%), grade 2 is 8(9.3%), grade 1 is 0(0%). Out of 38 subjects whose time of conception comes under Hemanta ritu, subjects who fall under grade 4 are 16(42.1%), grade 3 is 18 (47.3%), grade 2 is 4(10.5%), and grade 1 is 0(0%). Out of 59 subjects whose time of conception comes under Vasanta ritu, subjects who fall under grade 4 are 28(47.4%), grade 3 is 28(47.4%), grade 2 is 3(5%), and grade 1 is 0(0%). Out of 59 subjects whose time of conception comes under Vasanta ritu, subjects who fall under grade 4 are 28(47.4%), grade 3 is 28(47.4%), grade 2 is 3(5%), and grade 1 is 0(0%). Out of 58 subjects whose time of conception comes under Greeshma ritu, subjects who fall under grade 4 are 28(48.2%), grade 3 are 23(39.6%), grade 2 is 5(8.6%), grade 1 is 2(3.4%). Out of 55 subjects whose time of conception comes under Varsha ritu, subjects who fall under grade 4 are 31(56.3%), grade 3 are 21(38.1), grade 2 are (5.4%), and grade 1 are 0(0%).- Out of 94

sample sizes who belong to Ritu sandhi, subjects who fall under grade 4 are 34(36.1%), grade 3 are 44(46.8%), grade 2 are 15(15.9%), grade 1 are 1(1%).

For assessing Satwa bala, the question was framed regarding the mental status of the individual when suffering from any ailment. Grade 3 indicates that the individual has good tolerating capacity, grade 2 indicates that the individual gets scared when they suffer from any ailment but can manage by themselves, and grade 1 indicates that the individual gets worried and they find it difficult to manage by themselves and need the support of parents/ friends. Grade 3 indicates pravara, grade 2 indicates madhyama, and grade 1 indicates avara.

Out of 38 subjects whose time of conception comes under Hemanta ritu, subjects who fall under grade 3 are 26(68.4%), grade 2 are 12(31.5%), and grade 1 are 0(0%). Out of 86 subjects whose time of conception comes under Shishira ritu, subjects who fall under grade 3 are 49(56.9%), grade 2 are 31(36.0%), and grade 1 are 6(9.3%). Out of 49 subjects whose time of conception comes under Sharad ritu, subjects who fall under grade 3 are 26(53.0%), grade 2 are 18(36.7%), and grade 1 are 5(10.2%). Out of 59 subjects whose time of conception comes under Vasanta ritu, subjects who fall under grade 3 are 41(69.4%), grade 2 are 16(27.1%), and grade 1 are 2(3.3%). Out of 58 subjects whose time of conception comes under Greeshma ritu, subjects who fall under grade 3 are 37(63.7%), grade 2 are 14(24.1%), and grade 1 are 7(12%). Out of 55 subjects whose time of conception comes under Varsha ritu, subjects who fall under grade 3 are 39(70.9%), grade 2 are 12(21.8%), and grade 1 are 4(7.2%). Out of 94 sample sizes whose time of conception comes under Ritu sandhi, subjects who fall under grade 3 are 57(60.3%), grade 2 are 31(32.4%), and grade 1 are 6(6.3%).

## RESULT

**Sharirika bala:** In the present study, Sharirika bala is assessed by calculating the range. The range for Greeshma ritu is 16, Varsha ritu is 11, Vasanta ritu is 7, Sharad ritu 12, Shishira ritu is 23, Hemanta ritu is 22, Ritu sandhi is 16 as shown in Table 1.

**Satwa bala:** In the present study, Satwa bala is assessed by calculating the range. The range for Greeshma ritu is 104, Varsha ritu is 113, Vasanta ritu is 121, Sharad ritu 73, Shishira ritu 141, Hemanta ritu is 54, Ritu sandhi is 155 as shown in Table 2.

**Vyadhi bala virodhitwa:** In the present study, Vyadhi bala virodhitwa is assessed by calculating the range. The range for Greeshma ritu is 110, Varsha ritu is 118, Vasanta ritu is 98, Sharad ritu is 71, Shishira ritu is 112, Hemanta ritu is 56, Ritu sandhi is 124, as shown in Table 3.

**Vyadhi utpadaka pratibandhakatwa:** In the present study, Vyadhi utpadaka pratibandhakatwa is assessed by calculating the range. The range for Greeshma ritu is 70, Varsha ritu is 109, Vasanta ritu is 103, Sharad ritu 62, Shishira ritu 131, Hemanta ritu is -12, and Ritu sandhi is 148 as shown in Table 4.

## DISCUSSION

Seasonal change is due to the rotation of the Earth around the Sun and the Moon's rotation around the Earth. A year is divided into Uttarayana (Adana kala) and Dakshinayana (Visarga Kala) and has six ritu, Hemantha (early winter), Shishira (late winter), Vasantha (spring), Greeshma (summer), Varsha (rainy) and Sharad (autumn). Varsha-Sharad-Hemantha Ritu falls under the category of Visarga kala. Shishira-Vasantha-Greeshma falls under the category of Adana kala. By nature, the individual is

stronger at the ending of Visarga Kala, i.e., Hemantha ritu and the beginning of Adana kala, i.e., Shishira Ritu. During Dakshinayana (Varsha, Sharad, Hemantha Ritu), due to the influence of megha (cloudy), Vata (wind), varsha (rain), Surya tapa (sunny) and avyahata bala of shashi (uninterrupted strength of moon) the tapa (temperature) gets cooled down, and gradually there is an increase in the aruksha amlatwa, lavanatwa, madhuratva (increase in sourness, salty and sweetness respectively) in the environment which leads to increase in the bala of the individual.

In the present study, 439 samples were analysed, and it was found that the individuals whose Ritu of conception comes under Hemanta ritu are 38 in number, Shishira ritu are 86, Sharad ritu are 49, Vasanta ritu are 59, Greeshma ritu are 58, Varsha ritu are 55 and Ritu sandhi are 94.

In the present study, when shareerika bala was analysed, the individuals whose Ritu of conception is in Hemantha (38) and Shishira Ritu (86) represented a greater range (23 and 22 respectively) when compared to other Ritu. As mentioned in the classics, the shareerika bala and agnibala of the individual is pravara in this ritu. During dakshinayana, the bala gradually increases from Varsha Ritu to Hemantha ritu; similarly, in uttarayana, the bala gradually reduces from Shishira ritu to Greeshma ritu. The sharirika bala will be maximum at Hemantha and Shishira, which are also represented in this study. In Greeshma ritu, the range was found to be 16, which is highest when compared to Vasantha, Varsha, and Sharad, which might be due to the influence of regular intake of nitya sevaniya dravyas like milk, ghee by the individuals who were born during this ritu which might have influenced the bala of these individuals. Intake of nitya sevaniya dravyas regularly helps maintain swaasthya and prevents disease occurrence of disease<sup>8</sup>. Acharya Charaka mentions the concept of trividha bala. Sahaja bala is mentioned as swaabhavika, which means that bala in some individuals is pravara by birth without any particular influential factor. Kalaja bala is the one which is influenced by kala, such as adana kala and visarga kala, whereas yuktikruta bala is the one which is influenced by intake of ahara and vihara. Chakrapani has commented that ahara includes ghrita and mamsa, and vihara includes physical activity<sup>9</sup>. The subjects whose conception is in Varsha ritu also presented with pravara bala, which might have been due to the influence of regular intake of nityasevaniya dravyas by them, as represented in the study around 77% of people having pravara bala in Varsha ritu were taking ghrita, ksheera regularly.

In the understanding of vyadhi kashamatva, as explained by Acharya Charaka, there are mainly two aspects: vyadhi bala virodhitva and vyadhi utpadaka pratibandhakatva. In the present study, out of a 439-sample size, the highest range is obtained for Varsha ritu, and the lowest range is seen for Hemantha ritu. If we analyse the grades used, the highest score, four, represents avara bala, and the lowest grade, grade 1, represents pravara bala. Here, when the results are analysed, it is evident that Hemantha ritu is where vyadhibala virodhitva is in pravara Avastha which may be due to uttama sharirika bala and agni bala of the subjects. It is mentioned in Charaka Samhita Shareera sthana while explaining bala vriddhikara bhavas; he mentions that balavat purusha kale janma (person born during strong kala), where bala is maximum during Hemantha and Shishira, in the current study also the maximum subjects whose ritu of conception in Hemantha ritu presented with pravara bala. Next to Hemantha Ritu, people whose ritu of conception in Sharad ritu were found to be having pravara bala, which might have been due to the influence of regular intake of nityasevaniya dravyas by them, as represented

in the study around 85.7% of people having pravara bala in Sharad ritu were taking ghrta, ksheera regularly.

**Table 1: Calculation of range for assessment of Sharirika Bala**

Ritu	Sample size	H.S	L.S	Range
Greeshma	58	4	4	16
Varsha	55	3	4	11
Vasanta	59	2	3	7
Sharad	49	13	20	12
Shishira	86	5	2	23
Hemanta	38	5	3	22
Ritu sandhi	94	5	1	16

**Table 2: Calculation of range for assessment of Satwa bala**

Ritu	Sample size	H.S	L.S	Range
Greeshma	58	37	7	104
Varsha	55	39	4	113
Vasanta	59	41	2	121
Sharad	49	26	5	73
Shishira	86	49	6	141
Hemanta	38	26	12	54
Ritu sandhi	94	162	7	155

**Table 3: Calculation of range for assessment of Vyadhi Bala Virodhitwa**

Ritu	Sample size	H.S	L.S	Range
Greeshma	58	28	2	110
Varsha	55	31	3	118
Vasanta	59	27	5	98
Sharad	49	18	1	71
Shishira	86	32	8	112
Hemanta	38	16	4	56
Ritu sandhi	94	128	4	124

**Table 4: Calculation of range for assessment of Vyadhi Utpadaka Pratibandhakatwa**

Ritu	Sample size	H.S	L.S	Range
Greeshma	58	18	2	70
Varsha	55	28	3	109
Vasanta	59	26	1	103
Sharad	49	16	2	62
Shishira	86	34	5	131
Hemanta	38	13	25	-12
Ritu sandhi	94	152	4	148

In the domain of vyadhiutpadaka pratibandhakatva of vyadhi kshamatva, the highest grading, 4, refers to pravara bala, and the lowest grading, 1, relates to avara bala. In the present study, for people whose ritu of conception is in Hemantha ritu, the maximum number of subjects present with avara bala. Presenting with the least range of the data. Next is Sharad ritu, followed by Greeshma ritu, Vasanta, Varsha, and Shishira ritu.

Vyadhi kshamatva, as such, is dependent on various factors such as intake of asatmya ahara (unwholesome diet), satmya sevana (wholesome food), shadrasa ahara sevana (intake of shadrasas), ahara matra (quantity of food intake), satva bala (excellence of satva)<sup>10</sup>.

The variations in the study may be due to current lifestyle, method of food consumption, changes in environmental conditions, and pollutants. Acharya Sushruta has mentioned the concept of Aavyapanna ritu and Vyapanna ritu. Aavyapanna Ritu is where qualities of oshadhi and jala are unaffected, so prana, ayu, bala, and veerya are in their appropriate status. Whereas in Vyapanna Ritu, due to adrushta karana (unforeseen factors), jala and oshadhi

are affected. Consumption of these vikarayukta oshadhi and jala leads to different diseases and maraka (outbreak of epidemics)<sup>11</sup>.

Based on phenological, satellite and climatological studies over the 20<sup>th</sup> century, the global average surface temperature has increased by  $0.6 \pm 0.2^\circ \text{C}^{12}$ . As global warming intensifies, the seasons in a year no longer have equal months, and their onsets are irregular. It was observed in a study that over a period of 1952 to 2011, the length of summer in the northern hemisphere midlatitude increased from 78 to 95 days, and spring, autumn and winter decreased from 124 to 115, 87 to 82, 76 to 73 days respectively. Along with this, the seasonal temperature also varied, with summer and winter becoming warmer. Longer, hotter summers and shorter, warmer winters. As this trend is about to be amplified in the future, it also potentially affects the health sector.

This might explain why the subjects in this study with lesser strength have to fight against the occurrence of the disease (vyadhi utpadaka pratibandhakatva) irrespective of any season.

Satwa bala of the subjects having the time of conception in Shishira ritu shows maximum range, which is also consistent with the fact that bala is pravara during Hemantha Shishira Ritu. Bala is considered as a physical and mental strength. Satwa bala is influenced by sharirika bala. When the satwa bala of a person deteriorates, strength decreases, and diseases inflict<sup>13</sup>. The present study observed that the satwa bala of individuals whose Ritu of conception comes under Shishira ritu was pravara. Maternal stress has been shown to have a long-lasting effect on immunity, and it is linked to the development of diseases in the offspring.

Most of the fetus's innate and adaptive immune cells are influenced in the earlier phase of gestation itself. The maternal diet, stress, smoking, and exposure have a more significant influence in deciding the innate immunity of the fetus. During the first trimester of pregnancy, most immune cells develop and expand significantly until birth<sup>14</sup>. A study conducted to find out the seasonal influence over the immunity of humans revealed that during the rainy season comparatively the immunity of the individuals is minimal, which may be due to inappropriate intake of micronutrients and vitamin D. They also found that respiratory infection is much expected in late winter and early spring<sup>15</sup> which might correspond with end part of Shishira Ritu, Ritu Sandhi of Shishira Ritu – Vasantha Ritu and initial phase of Vasantha Ritu. This was due to the influence of Kapha Vilayana during this period<sup>16</sup>. So, if the mother has conceived during this period due to the influence of the external environment, this might also affect the child's immune status.

## CONCLUSION

In the current study, out of 439 subjects, it was observed that 94 of them fall under Ritu sandhi kala. Due to varied presentations, it was not considered for results and discussion. So out of 345 subjects, sharirika bala, satwa bala, vyadhi bala virodhitwa of the individuals was found to be maximum during Hemanta- Shishira ritu, which is consistent with what is mentioned in our classics. Vyadhi utpadaka pratibandhakatwa was found to be good in Greeshma ritu, contrary to the references. But vyadhi kshamatava depends on various factors like satmya ahara, shadrasa ahara, satwa bala, and intake of nitya sevaniya dravya, which might explain the inconsistency in the results.

As Acharya Charaka mentions, the normal and abnormal states of shareera (body), indriya (sense organs), and varna (colour) of any individual are dependent on beeja, atma karma, ashaya, kala dosha, maturahara vihara dosha. So here, an attempt was made to

assess the influence of the kala factor on bala and vyadhi kshamatva.

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