



E-ISSN: 2321-2187
P-ISSN: 2394-0514
IJHM 2017; 5(6): 87-91
Received: 15-09-2017
Accepted: 16-10-2017

Fasnath Arabi
PG Scholar, Department of
Manovijnan, VPSV Ayurveda
College Kottakkal, Kerala, India

M Jithesh
Associate Professor,
Department of Kayachikitsa and
Post Graduate Studies in
Manovijnan, VPSV Ayurveda
College Kottakkal, Kerala, India

Test anxiety and its Ayurvedic approach

Fasnath Arabi and M Jithesh

Abstract

Anxiety is very much essential and has a significant role in one's educational, professional as well as the emotional life. Academic pressure associated with the demands of schooling creates immense stress for students of all age groups, from even the low levels of school to the collegiate level. Hence it is not surprising that the testing environment generates anxiety to a large number of individuals. An individual's perception of the anxiety or stress determines whether the result is positive or even detrimental. Test anxiety defined as a reflection and expression of general anxiety in evaluative situations resulting in poor test performances. Studies have revealed that test anxiety is widespread in the general population, especially among women. Estimated 2-3 students in any classroom are highly anxious and ten million elementary school students are not performing at their peak capacity, due to test anxiety. In this article, a brief review of concepts, components, prevalence and management of test anxiety and also an attempt has been made to explore the concepts of test anxiety throughout *Ayurvedic* parlance in terms of the condition of *Chittodvega*. The management of Test anxiety and *Ayurvedic* approach to be adopted is discussed which includes internal medicines, *Medhya rasayana*, *Sadvrita*, *Achara rasayana* etc.

Keywords: Test anxiety, *Chittodvega*, *Yuktivypasraya chikitsa*, *Satvavajaya chikitsa*, *Achara rasayana*

1. Introduction

Today's society tends to be over concern about the importance of examinations as well as academic achievements. Therefore society pressurizes pupils to the utmost position resulting an increased anxiety and stress and subsequently affecting the individual's academic, vocational and emotional state. The word anxiety is originated from 'to vex or trouble' which means absence or presence of psychological stress that cause feelings of fear, concerns and horror. Thus anxiety refers to a psychological and physiological state consisting of emotional, somatic, cognitive and behavioral components. Lack of anxiety or high anxiety create problems in life and leads to considerable risks, on the other hand moderate anxiety can motivate people to manage their problems and able to attain success in their life. High level of anxiety in students hampers their educational performance. There have been extensive literature studies on test anxiety symptoms, negative consequences and treatments [1].

Test anxiety is a form of social evaluation anxiety experienced by individuals in an environment of assessment. In general, the term Test anxiety is a psychological condition in which pupil experiences extreme stress, anxiety, discomfort and irrational fear during or before the examinations. Scientifically, Test anxiety refers to the set of phenomenological, physiological and behavioral responses that accompany the concern about the possible negative consequences or failure of an exam or similar evaluative situations. Test anxiety also refers to an unpleasant feeling or emotional state that has physiological and behavioral concomitants and that is experienced in formal testing or other evaluative situations [2]. Within the modern day educational programs, almost all individuals are subjected to tests at least once in their academic life, anxious students has been negatively associated with test performance, achievement of degrees and selection of occupation. Therefore we should considered test anxiety as a significant problem in student's academic life [3].

Report of previous studies shows that an anxiety rate of 10 - 25% or 30% among elementary and secondary school children experiencing test anxiety [4]. Recent studies reported that anxiety rates among school children are much higher than 33%. Based on gender difference, female students are experiencing higher levels of test anxiety compared to male students. Unrealistic expectation of parents from their children, parental pressure that cause greater worry, fear of failure, test irrelevant thoughts, and stronger bodily symptoms, excessive pressure and fear of teachers, inadequate study, poor motivation and lack of self-esteem, poor nutrition and sleeping disturbances, previous experience of poor performance in tests etc. are the main factors leading to test anxiety.

The components of test anxiety are worry, test irrelevant thinking, tension, bodily symptoms like sweating, tremor, headache, palpitation, nausea, diarrhea etc. Worry, emotion, Cognitive

Correspondence

Fasnath Arabi
PG Scholar, Department of
Manovijnan, VPSV Ayurveda
College Kottakkal, Kerala, India

interference and lack of self-confidence are also considered as the components of test anxiety [5]. Symptoms of test anxiety can be divided mainly into three categories - Physiological, cognitive or behavioral and emotional symptoms.

Table 1: Components of Test anxiety

Physiological	Cognitive / Behavioural	Emotional
Head ache	Fear of failure	Low self esteem
Stomach ache	Random thoughts	Frustrations
Nausea	Feeling of inadequacy	Depression
Diarrhea	Negative self-talk	Anger
Excessive sweating	Suicidal ideation	Hopelessness, helplessness
Shortness of breath	Feeling of excessive mental pressure	Feeling of disappointment
Fainting	Insomnia or hypersomnia	
Rapid heart beat	Dropout from school	
Dry mouth	Difficulty in concentrating	
Panic attack		
Trembling and limbs become cold		
Vomiting, tremor		
Frequent urination		

1.1 Diagnostic Criteria

The diagnostic and statistical manual –IV (DSM –IV) states that Test anxiety is mainly a concern over negative evaluation and falls in to classification of Social phobia [6]. Social phobia is defined as a marked and persistent fear of social or performance situations in which embarrassment may occur. As per ICD – 10, Test anxiety would be included in phobic anxiety disorders F 40.1 [7] Test anxiety can be measured by student self-assessment questionnaire which includes physical and psychic symptoms experienced before or during the time of examination.

Table 2: ICD 10 Phobic anxiety disorders- Social phobia

	Diagnostic criteria
A	The psychological, behavioral or autonomic symptoms must be primarily manifestations of Anxiety and not secondary to other symptoms such as delusions or obsessional thoughts
B	The anxiety must be restricted to or predominate in particular social situations
C	The phobic situation is avoided whenever possible

Table 3: Test anxiety self-assessment questionnaires

Features	Never	Sometimes	Usually
Have trouble sleeping the night before a test.			
Before a test, I get a headache			
lose my appetite before a test			
Because of panic, I have cut class on a test day			
My heart pounds just before or during a test.			
During a test, my palms sweat			
During a test, I have become nauseated and had to leave the classroom			
I have had pains in my neck, back, or legs during a test			
I feel nervous and jittery when I am taking a test			
During a test, my chest feels tight and I have trouble remembering			
I make careless errors on tests			
My mind goes blank during tests			
I worry when other students are finished before I am.			
I feel pushed for time when I am taking a test			
I worry that I am doing poorly on a test and that everyone else is doing well.			
When I am taking a test, I think about my past Failures			
During a test, I feel as if I studied all the wrong things			
I can't think clearly during tests.			
I have a hard time understanding and remembering directions when I am taking a test.			
After a test, I remember answers to questions I either left blank or answered incorrectly			

Questions 1-10 on the self-assessment refer to physical symptoms and 11- 20 refer to mental symptoms of test anxiety. Sometimes “or —usually “ten or more times, have some test anxiety.

The presently available medications not completely cure text anxiety, but will keep them under control. Commonly used medicines are beta blockers, which reduces the physical manifestations of anxiety like heart rate, sweating etc. and also Benzodiazepines, Antidepressants etc. Another approach is the use of psychotherapy. Cognitive behavioral therapy (CBT) [8] is very useful in treating anxiety disorders. Cognitive approaches include rational emotive therapy and cognitive restructuring methods, behavioral approaches include desensitization procedure, relaxation skills, anxiety induction and training for how to manage anxiety. Cognitive-behavioral approaches include cognitive-behavioral modification and stress-inoculation skills. By the implementation of CBT in students, we are able to change the pattern of thinking, associated fear and to overcome the

negative beliefs. Medication combined with psychotherapy has shown to be the most effective treatment approach for people suffering from symptoms associated with Test anxiety.

2. Ayurvedic Perspective

Ayu is the combined state of *Sareera*, *indriya*, *satva* and *atma* as explained in the Ayurvedic parlance [9]. The word *satva* meant not only for *manas* but also for *chitta*, *chetana* etc. The word “*Mana*” is derived from the root “*Man*” adding the suffix “*Asuna*”, “which perceives, that leads to knowledge, which analyses by special knowledge, Mind or psyche”. *Manas* is defined as a substance which establishes the contact between the soul and body and which regulates the functions of the *Indriyas*. [10] A substance which is responsible for the presence or absence of the knowledge is called *Manas* [11]. *Satva*, *Raja* and *Tama* are the normal characteristic of *Mana* and are called as *Triguna* or *mahaguna* [12]. *Satva* is the guna whose essence is purity, fineness and subtlety. *Satva* is the component concerned with lightness,

brightness and pleasure. *Satva* is associated with ego, mind and intelligence. Its association with the consciousness is the strongest. Though *satva* is an essential condition for consciousness, it is not sufficient. *Rajas* are concerned with the actions of objects. It is associated with activity and motion. In material objects, motion and action are the results of *rajas*. In living beings not only activity and restlessness, but pain also are caused by *rajas*. *Tamas* is the constituent concerned with the inertia and inaction. In material objects, it resists motion and activity. In living beings, it is associated with coarseness, negligence, indifference and inactivity. In man, it manifests itself as ignorance, insensitivity and inaction. When the physiology of *rajas* and *tamas* are disturbed, then they are considered as abnormal and constitute a pathological state of *Mana* leading to *Manasika Vikaras* like *kama*, *krodha*, *lobha*, *moha*, *irshya*, *chittodvega* etc. [13].

In Ayurveda, various psychological disorders are mentioned by *achaaryas*, which shows some similarity with anxiety disorders. Various texts have described many terms related to mental status like *chittodvega*, *chittavibhramsa*, *chittanasa*, *anavasthithachitta*, *chittavibhrama*, *chittaviparyaya* etc. *Anavasthithachittatwa* is the main feature of *chittodvega*. *Chittodvega* seems to be nearest term for anxiety disorders, which is one of the psychological disorder, in which affliction of mind by anxiety, fear, and agitation are seen. By considering the different meaning of the word '*udvega*', it can be said that *chittodvega* is a status in which features of anxiety are seen.

2.1 Chittodvega

The term *chittodvega* comprises of two words...*chitta* and *udvega*. The word *chitta* is derived from the root '*chit*' means 'to perceive, fix the mind upon, to observe, to aim at, to intend, to be anxious about, to resolve, to understand, to know. *Udvega* is derived from the root '*Ud*' means 'Anxiety, publicity, motion upwards, separation, upon, on, over, above, rank. So *Chittodvega* simply defined as *chitta* (mind) + *udvega* (anxiety) = *chittodvega* (Anxious state of mind). According to *chakrapani*, *chittodvega* defined as चित्त उद्विग्नता चित्तोद्वेगः [14] *Chittodvega* is more applicable term to illustrate anxious status of mind resulting from various causes which is compared with Test anxiety.

2.2 Etiology of Chittodvega

The principal cause for all *sareerika* and *manasika rogas* has been stated to be (a) *pranajaparadha* (volitional transgression) (b) *asaatma indriyatha samyoga* (deficient, excessive or perverted use of senses) (c) *parinama* (deficient, excessive or perverted incidence of seasons). In general, psychiatric illness is due to dissociation of mind from what is desired and its association with what is undesired [15]. *Pranajaparadha* also stated as the main cause of *manasika vikaras* like *irshya*, *soka*, *bhaya* etc [16]. Psychiatric illness like *krodha*, *soka*, *bhaya* arise due to either *Iccha* (desire) or *dvesa* (aversion) [17].

The causes mentioned for *chittodvega* include set freeing of controllable *vegas* (*dharaneeya vegas* –suppressible urges) and controlling *adharaneeya vega* like *kama*, *krodha*, *bhaya* etc. leads to diseases [18] and leads to illness like *chittodvega* and *unmada* [19]. Vitiating of *rajas* and *tamas*, as well as intake of *virudha* (incompatible) food is also the causative factor of *chittodvega*. Weak persons both physically and mentally (*avara satva*), are more prone to psychological illness. *Manobhigata* occurring due to bereavements like

loss of wealth, loss of employment, death of partner etc, results in distortion of *manas* [20]. *Visamacheshta* ie abnormal motor activities like abnormal posture, excessive exercise and violation of *sadvritha* also included as etiological factors [21]. From these one or more factors combine and produce the disease.

2.3 Samprapthi Ghatakas

- *Manasika dosas* – *Rajas*, *Tamas*
- *Sareerika dosas* – *Vata* - *Prana*, *udana*, *vyana*; *Pitta* - *Sadhaka*; *Kapha* – *Tarpaka*
- *Dooshya* – *Manas*, *saptadhatu*s
- *Srotas* - *Manovahasrotas*
- *Vyakthasthana* – *Manas*, *sarvasareera*

2.4 Pathogenesis of Chittodvega

The positive family history, *vataja prakrthi*, *avara satva* etc. plays an important role in predisposing the person to *chittodvega*. An emotion like *udvega* is a common response in part of life but persons having *satvasara* can resist the ill effect of such emotional disturbance as they are seen unmoved even by severe affection. On the other hand when the person having *alpasatva* indulges in *pranajaparadha* or *asatmendriyatha samyoga* or is under stress, it initiates the disease process by resulting in imbalance of *manodosas* - *Rajas* and *Tamas*. At this stage the person exhibits an exaggerated response to emotional disturbance, leading to clinical manifestation.

When these psychic responses continued for a long period and override the limits, they start influencing the bodily *dosas*. At the biological level especially *Vata* gets vitiated (as it is controller of mind) and is having direct relationship with *Rajas*. At this stage, bodily symptoms predominantly of *Vatha vitiation* are seen. Reduction in *Tarpaka Kapha* resulting in undernourishment of *indriyas* and dearangement of *sadhakapitta* resulting in *bhaya*, *moha*, *krodha* etc. The vitiated *doshas* move to *manas* leading to manifestation. In chronicity, this affects *jus*, *Agni* and gradually leads to depletion of *dhatu*s. When the disease is not treated properly and on chronicity, leads to major psychiatric illness such as *unmada*.

Table 4: Symptoms of test anxiety with Ayurvedic counterparts

Test Anxiety	Ayurveda
Fear of failure	<i>Bhaya</i>
Tremor/trembling	<i>Vepathu</i>
Anger	<i>Krodha</i>
Sleep disturbances	<i>Nidrabhramsa</i> , <i>Alpanidra</i>
Random thoughts	<i>Chinta</i>
Poor concentration	<i>Moha</i>
Sweating palms during exam	<i>Atisweda</i>
Palpitation	<i>Hrdrava</i>
Frustrations	<i>Amarsha</i>
Feeling of disappointment	<i>Vishadam</i>
Fainting	<i>Bhrama</i>
Headache	<i>Siroruk</i>
Stomach discomfort	<i>Udaraveshtha</i>
Shortness of breath	<i>Swasa samrodha</i>
Dry mouth	<i>Mukha sosha</i>

2.5 Management

Ayurvedic treatment for the mitigation of the diseases has always been through 'holistic approach' and aimed at maintenance of health for healthy people and curing the disease for diseased person. Ayurveda recommends three types of treatment for mental illnesses as well as physical

illness; they are *daivavyapasraya chikitsa* (divine or spiritual therapy), *yuktivyapasraya chikitsa* (logical therapy) and *satvavajaya chikitsa* (psychotherapy). Let us examine them in brief.

2.5.1 Daivavyapasraya chikitsa

This refers to measures like *mantra* (incantation), *oushadha* (wearing sacred herbs), *mani* (wearing precious gems), *mangala* (propitiatory rites), *upahara* (offerings) *gamana* (pilgrimage) etc ^[22] which are measures recommended in mental disorders caused by *agantu* (external) factors and administered judiciously after considering the nature, faith, religiosity, culture and educational level of the patient ^[23] and is also reported effective in *Chittodvega*.

2.5.2 Yuktivyapasraya chikitsa

Yuktivyapasraya chikitsa is the administration of proper diet and medicaments for *samana* (palliative medicines) and *sodhana* (purification of the body) ^[24]. *Ayurveda* gives prime importance to *pathya vyavastha* (prescription of diet and activity), which comprises indications and contraindications with respect to diet, activity, habits and emotional status. This is done to enhance the effect of therapeutic measures and to impede the pathogenesis of a disease process.

In severe *chittodvega*, *sodhana* (elimination of dosha) has to be done by adopting various purificatory measures. After *sodhana*, *samana* drugs and *rasayana* are advised in order to bring back the deranged *manas* to normalcy. But in mild *chittodvega*, *samana* therapy and *rasayana* therapy is beneficial. In Test anxiety techniques such as *Abhyanga*, *Sirodhara with medicated takra or ksheera*, *Sirolepa*, *vasti* (enema) and *nasya* (nasal instillation) are also ideal.

Medhya Rasayanas ^[25] are a group of medicinal plants described in *Ayurveda* specifically to improve memory, willpower and intelligence which include drugs such as *Sankhupushpi*, *Brahmi*, *Mandukparni*, *Guduchi* etc the recent studies has shown the possibility of varying degrees of psychotropic action in these drugs especially anxiolytic effect. It is interesting to note that different food items like *ksira*, *ghrta*, *purana ghrta*, *draksa* etc are beneficial in various mental disorders ^[26]. There are several foods that may reduce anxiety symptoms ^[27]. Healthy eating leads to healthy hormonal functioning, which leads to an improved sense of well-being. Fresh fruits, vegetables, tryptophan rich foods like oats, soy, poultry, and sesame seeds, magnesium rich foods like black beans, Omega-3 Fatty Acids, are the best to increase *satva*, reduce anxiety and psychotropic.

2.5.3 Satvavajaya chikitsa

Satvavajaya has a major role in the treatment of all diseases especially *manovikaras*. *Satva* is the mind and *avajaya* is bringing the mind under control; so this is the therapeutics for mental or emotional stresses like anxiety and disturbances. The main aim of this therapy is to restrain mind from unwholesome objects ^[28]. A physician should make proper rapport for helping the patient in the form of regulating his thought process, replacing negative ideas, proper channeling of presumptions and proper advices. Proper awareness of these brings balance in one's life, especially in students. The best approach to achieve the goal of *satvavajaya chikitsa* as mentioned earlier is through *jnanam* (superficial knowledge), *vijnanam* (analytical thinking/ deep knowledge), *dhairya*, (courage), *smrti* (memory), and *Samadhi* (concentration), according to *Caraka* ^[29]. Mental disorders caused by *kama*, *Soka*, *bhaya* etc should be countered by inducing the opposites passion in order to neutralize the causative ones ^[30].

Similar to *satvavajaya chikitsa* in *Ayurveda*, *yoga* are also capable of eradicating stress related psychological emotional disorders by calming the mind and by providing physical mental emotional and spiritual energies. With the continuous practice of *Yoga* one can achieve perfect union of body, mind, and soul; there is gradual decrease in *Rajas* and *Tamas* of mind, leading to complete tranquility and peace. In the modern field psychotherapy, counseling and relaxation techniques are used to manage Test anxiety. Many of the yoga techniques are parallel to these techniques and there by attains relaxation of mind and get cure for the condition. Selected practice of *Yoga* should be planned for each individual by an experienced teacher, depending upon the individual's body constitution, temperament, age, and any physical ailments

2.6 Preventive Measures

2.6.1 Sadvrtha (code of conduct)

The best treatment to a disease is the avoidance of *causative factors* and *Sadvritta* is best equipment in this regard. Stress response depends on personality of a person and good personality can enhance by good personal or social conduct. A self-review could help to judge one's conduct and for keeping good or balanced condition of body and mind ^[31]. Good conduct practice may also influence the hormone, through the correction of level of catecholamine, cortisol, and pro inflammatory cytokines and leads to improve the normal physiological transformation of body, thereby reduce anxiety

2.6.2 Achara rasayana (behavioral approaches)

Achara rasayana ^[32] is a unique concept in *Ayurveda* that implies moral, ethical, and benevolent conduct: truth, nonviolence, personal and public cleanliness, mental and personal hygiene, devotion, compassion, and a yogic lifestyle. These behaviors bring about rejuvenation in the body-mind system. One who adopts such conduct gains all benefits of *rasayana* therapy without physically consuming any material *rasayana* remedy or recipe, although it can be practiced alone or in a combination with material substance *rasayana* therapy. The concept of *Achara rasayana* is to change our behaviors in order to reverse the disease process and stay in balance. Practice of *Achara rasayana* will reduce the stress and anxiety and thus prevent the release of free radicals and improves the psychoneuro-immunity ^[33]

3. Discussion

Latest updates on the issue of test anxiety illustrate that its impacts on students' life could be educational, professional and emotional and is a real problem. Despite treatment advances over the past decades, test anxiety still remains a challenge for the mental health professionals and results in marked functional impairment in a substantial proportion of students. Therefore, different treatment approaches and techniques should be utilized by psychiatrist and psychotherapist to manage such a condition.

Chittodvega is mainly caused by vitiation of *manasika dosas rajas* and *tamas* and *sareerika dosas prana vata*, *udana vata*, *vyana vata*, *sadhaka pitta* and *tarpaka kapha*. So treatment is mainly aimed to bring back these to normalcy. *Yuktivyapasraya chikitsa* and *satvavajaya chikitsa* are recommended methods for correcting the vitiated *dosas*. *Yoga* and meditation play an important role for providing positive energy to the body and mind. Practice of *sadvritta* and *Aachara Rasayana* can be administered to a healthy individual so as to reduce the anxiety.

4. Conclusion

In today's lifestyle, stress is increasing day by day in individuals of all ages. Modern medicines are good for short term management but possess many untoward effects and have their own limitations. Test anxiety or *chittodvega* is a disease having its impact mainly on mind of children. The various methodologies mentioned in Ayurveda definitely help the children to overcome their anxiety and hence fruitful in their life and guide them to become ideal citizen's of tomorrow and hence assets for the nation.

5. References

1. Arezou Asghari, Rusnani Abdul Kadir, Habibah Elias, Maznah Baba; Test anxiety and its related concepts: A brief review; Education Science and Psychology; 2012, 3(22).
2. Duesek JB. The development of test anxiety in children; Dept of psychology Washington, Seattle, 1980.
3. Asghari, Rusnani Abdul Kadir, Habibah Elias, Maznah Baba. Test anxiety and its related concepts: A brief review; Education Science and Psychology, 2012, 3(22).
4. Arezou Asghari, Rusnani Abdul Kadir, Habibah Elias, Maznah Baba: Test Anxiety and Its Related Concepts: A Brief Review. GESJ: Education Science and Psychology, 2012, 3(22).
5. Sarason IG. Stress, anxiety and cognitive interferences: Reactions to tests. Journal of Abnormal and Social Psychology, 1984, 46.
6. American psychiatric association; Diagnostic and statistical manual of mental disorders (DSM V) 5th edition, 2016.
7. ICD-10; Classification of mental and behavioral disorders: Clinical descriptions and diagnostic guidelines: World Health Organization, 2011.
8. Treatment of Anxiety. The National Institute of Mental Health (NIMH). Retrieved. 2012.
9. Acharya YT. Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani, Reprint edition, Chaukhambha Orientalia, 2005.
10. Acharya YT. Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani, Reprint edition, Chaukhambha Orientalia; Varanasi, 2002.
11. Acharya YT. Charaka: Charaka Samhita Āyurveda Deepika Commentary of Chakrapani: Sareerastana. Chaukhambha Orientalia; Varanasi 2002; 7th ed. 1/18.
12. Sharma PV, Sushruta Samhita with Nibandha Samgraha Commentary of Dalhana, Chaukhambha Orientalia, Varanasi (India) Eighth edition, 2005. 338.
13. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Sareerastana. 7th ed., 2002 1/18
14. Acharya YT. Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani, Reprint edition, Chaukhambha Orientalia; Varanasi, sootrasthana. 2006, 11/54
15. Sharma PV, Susruta Samhita with Nibandha Samgraha Commentary of Dalhana, Chaukhambha Orientalia, Varanasi (India), Eighth edition, sootra sthana 2005, 11/54.
16. Sharma PV, Sushrut Samhita with Nibandha Samgraha Commentary of Dalhana, Chaukhambha Orientalia, Varanasi (India), Eighth edition sootra sthana, 2005.
17. Kavirajatrived Gupta, Ashtangahridya of vagbhata, Chaukhambhaprakashana, Varanasi, reprint sootra sthana 2007; 1/1.
18. Kavirajatrived Gupta, Ashtangahridya, of vagbhata, Chaukhambhaprakashana, Varanasi, reprint – sootra sthana 2007, 5/25.
19. Acharya YT. Charaka, Charaka Samhita, Āyurveda Deepika. Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Nidanastana. 2002, 7/3.
20. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Chikitsastana. 2002, 9/2.
21. Acharya YT, Charaka, Charaka Samhita, Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Chikitsastana. 2002, 9/2.
22. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Sootra stana. 2002, 11/54.
23. Acharya YT, Charaka, Charaka Samhita, Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Chikitsa sthana. 2002; 9/93-94.
24. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi Sootra stana. 2002., 7th ed. 11/54
25. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi 2002 1 - 3rd pada / 30
26. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani, Chaukhambha Orientalia; Varanasi 2002, 77.
27. Acharya YT. Charaka, Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi 2002, 473.
28. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi, 2002, 474.
29. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi 2002, 50.
30. Acharya YT. Charaka: Charaka Samhita with Āyurveda Deepika Commentary of Chakrapani: Chaukhambha Orientalia; Varanasi 2002, 383,384
31. Ranade S. Natural healing through Ayurveda. First edition. Delhi: Motilal banarasidass publishers private limited; year: 1994, reprint: 1996, 6.
32. Acharya YT. Charaka: Charaka Samhita: Chaukhambha Orientalia; Varanasi 2002. *chikitsa sthana*. 1/4/ 30-35.
33. Dr. Santosh Neelappa Belavadi. Rasayana Sarvaswam (Encyclopaedia – Dealing with entire range of knowledge of Rasayana). First edition. Gadag (Karnataka). Vaishnavi Publication. 2011.