



The Efficacy of *Narasimha Rasayana* in Reducing Testosterone Deficiency in Adult Males

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Abstract

Introduction: Testosterone deficiency is defined as the clinical condition characterized by deficient production of testicular testosterone resulting in various symptoms pertaining to somatic, psychologic and sexual domains. This condition was identified as a *Vāta-Pitta Pradhana Avastha* where the vitiated *Vāta* and *Pitta Dōṣās* take *Sthana Samsraya* in the *Viguna Śukravāhasrōtas* resulting in *Śukra Kshaya* along with its functional impairment causing symptoms involving both *Sarīra* and *Manas*. **Methodology:** This was a pre and post-test single group clinical study conducted in 20 male patients in the age group 30 to 60 years having AMS (Aging Males Symptom) score between 27 and 49 and serum total testosterone (TT) level below 450 ng/dL. The treatment protocol adopted was *Pācana Dīpana* with *Aṣṭacūrṇa*; *Abhyantara Snēhana* with *Kalyāṇaka Ghṛta*; *Sarvāṅga Abhyanga* (*Tila Taila*) and *Bāṣpa Swēda*; *Kōṣṭhaśuddhi* with *Gandharvahasta Ēranda Taila* and *Rasāyana Prayōga* with *Nārasimha Rasāyana* for 30 days. After completion of the study, the results were statistically analysed using Wilcoxon signed rank test. **Result and Discussion:** The mean total AMS Score reduced from 36 to 22.9, with a considerable reduction in somatic (14.2 to 9.45), psychological (12 to 7.4) and sexual subscales (9.65 to 6.05). The mean serum total testosterone value improved from 321.985 ng/dL to 399.839 ng/dL. Here, the treatment protocol was targeted at improving the *Śukra Sārata* by removing the *Śukravāha Śrotōvigunyam*. The drugs in *Nārasimha Rasāyana* having action at levels of *Agni*, *Śrōtas* and *Dhātu*, along with the specific affinity of the formulation towards the *Śukravāha Śrōtas* ameliorated this condition by improving the physical, psychological, immunological and sexual domains in the individual. **Conclusion:** This treatment protocol helped in a correction the somatic, psychological and sexual symptoms in the individual with TD along with improving testosterone values with a statistical significance of p-value <0.05.

Keywords: Hormones, *Kalyāṇaka Ghṛta*, Middle Aged Males, *Śukra Kshaya*

1. Introduction

Many middle-aged males were found reporting symptoms like chronic low energy, mental and physical fatigue, decreased libido, decreased motivation, depressive mood, sleep disturbances. Due to the vague presentation of these

symptoms, the initial evaluation did not reveal anything conclusive. Owing to the similarity of these symptoms with *Śukra Kshaya Lakshanas*¹ (*Dorbalyam*, *Mukha Śosa*, *Agni Sadanam*, *Srama*, *Sukra Avisarga*, *Klaibyam*) and *Śukra Karma*² (*Dhairya*, *Chyavanam*, *Prīti*, *Dēhabalam*, *Harṣa* and as *Bija*) with the functions of testosterone³,

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serum total testosterone was evaluated which revealed low testosterone levels. This condition was thus diagnosed as testosterone deficiency which is defined as the clinical condition characterized by deficient production of testicular testosterone resulting in various symptoms pertaining to somatic, psychological, and sexual domains⁴. According to 2019 reports, in India testosterone deficiency was found to have a prevalence of 48.18%⁵ and this prevalence increases progressively with each decade of life. As testosterone levels decline physiologically at a rate of 0.4 – 2 % annually after 30 years⁶, it is a need to address this issue to increase their quality of life.

In ayurvedic parlance, this was identified as a *Vāta-Pitta Pradhana Avastha*. Here, the vitiated *Vāta* and *Pitta Dōṣās* take *Sthana Samsraya* in the *Viguna Śukravāhasrōtas* resulting in *Śukra Kshaya* along with its functional impairment causing symptoms involving both *Sarīra* and *Manas*.

2. Methodology

A single-arm exploratory open-label clinical trial to assess the efficacy of *Nārasimha Rasāyana* in reducing testosterone deficiency in adult males.

2.1 Recruitment of Patient and Data Collection

Patients attending the OPD and IPD of Amrita Ayurveda Hospital, Vallikavu, Kollam, Kerala under the postgraduate

department of *Kāyachikitsa* with symptoms of testosterone deficiency were first assessed using Aging Males Symptom (AMS) questionnaire. Those with scores of 27 to 49 were biochemically evaluated for serum total testosterone and Routine Blood [Hb, Total WBC count, Differential count, ESR] and Routine Urine [biochemical – Urine Albumin, Urine RBC, Urine Glucose and microscopic examination – Urine pus cells, Epithelial cells, Casts, Bacteria, Crystals, Others] examination. Patients fulfilling the eligibility criteria were selected for the study.

2.1.1 Inclusion Criteria

Male patients in the age group 30 to 60 years with AMS scores between 27 and 49, serum TT level below 450 ng/dL and are willing to give written consent.

2.1.2 Exclusion Criteria

Diagnosed cases of metabolic diseases (hypertension, dyslipidaemia, diabetes), testicular CA, AIDS or under antiretroviral therapy, underwent orchidectomy, and those with testicular trauma.

2.1.3 Diagnostic Criteria

The diagnosis was done based on the AMS questionnaire score (between 27 and 49) and serum total testosterone values (<450 ng/dL).

Table 1. Details of therapeutic intervention

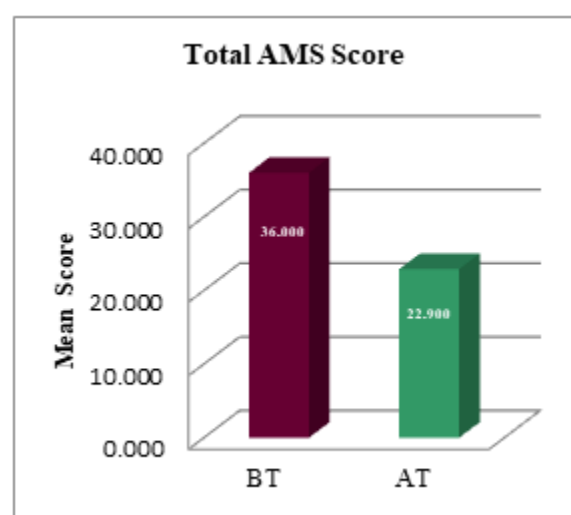
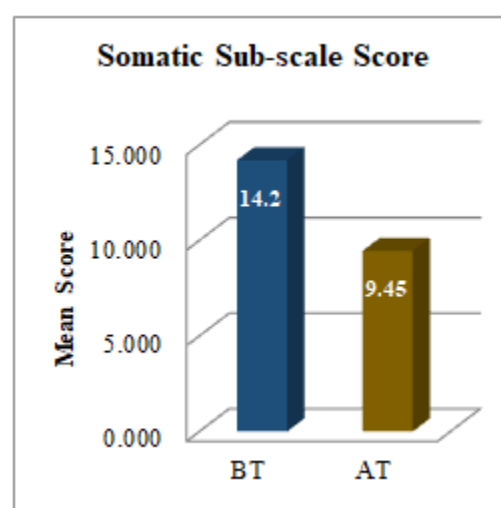
Sl. no	Treatment	Internal Medicine	External Medicine	Dosage	Anu pana	Duration
1	<i>Pācana Dīpana</i>	<i>Aṣṭacūrṇa</i>		6 g twice daily before food	Warm water	5 days or till the attainment of <i>Pakwa Mala Lakshanas</i>
2	<i>Snēhapāna</i>	<i>Kalyāṇaka Ghṛta</i>		50 ml, 100 ml, 150 ml		3 days
3	<i>Sarvāṅga Abhyāṅga</i> and <i>Bāshpa Swēda</i>		<i>Sarvāṅga Abhyāṅga</i> with <i>Tila Tailam</i> and <i>Bāshpa Swēda</i>			3 days
4	<i>Kōṣṭha Śōdhana</i>	<i>Gandharvahasta Ēranda Tailam</i>		40 ml		1 day
5	<i>Samsarjana</i>					According to <i>Śuddhi</i> *
6	<i>Rasāyana Prayōga</i>	<i>Nārasimha Rasāyana</i>		50 g before food		30 days

**Avara Śuddhi* – 1 day; *Madhyama Śuddhi* - 3 days; *Pravara Śuddhi* -5 days

Table 2. Effects of therapy on assessment criteria

Domain		Mean	SD	Mean Difference	z value	p-value
Somatic score	BT	14.2	4.150	4.750	-3.961 ^{*b}	<0.001
	AT	9.45	2.188			
Psychological score	BT	12	4.292	4.6	-3.751 ^{*b}	<0.001
	AT	7.4	1.729			
Sexual score	BT	9.65	2.996	3.6	-3.744 ^{*b}	<0.001
	AT	6.05	0.759			
Total AMS score	BT	36.000	6.026	13.1	-3.953 ^{*b}	<0.001
	AT	22.900	2.614			
Total testosterone	BT	321.985	86.430	-77.854	-3.927 ^{*b}	<0.001
	AT	399.839	102.202			

*Significant at 0.05 level; b. Based on positive ranks

**Figure 1.** Mean BT and AT score of AMS questionnaire.**Figure 2.** Mean BT and AT score of somatic sub-scale.

2.1.4 Assessment Criteria

AMS questionnaire score (total score and its component's score) and serum TT levels were assessed before treatment and after treatment i.e., on 0th and after 30 days of *Rasāyana* administration.

2.1.4.1 Intervention

The treatment protocol adopted was *Pācana Dīpana* with *Aṣṭacūrṇa*; *Ābhyantara Snēhana* with *Kalyāṇaka Ghṛta*; *Sarvāṅga Abhyāṅga* with *Tila Taila* followed by *Bāṣpa Swēda*; *Kōṣṭhaśuddhi* with *Gandharvahasta Ēranda Taila* and *Rasāyana Prayōga* with *Nārasimha Rasāyana*. Details of therapeutic intervention are specified in Table 1.

2.2 Statistical Analysis

The results were statistically analysed using Wilcoxon signed rank test and the conclusion was drawn.

3. Results

Out of the 20 subjects, the majority (65%) were in the age group 30-40 years followed by 41-50 years (25%). 35% had exposure to workplace heat; 55% had irregular dietary patterns and appetite; 60% had poor sleep; 80% had moderate stress and 10% had high stress.

The effects of therapy on total AMS score, its domains, and total testosterone levels are detailed in Table 2 and illustrated in Figures 1 to 8.

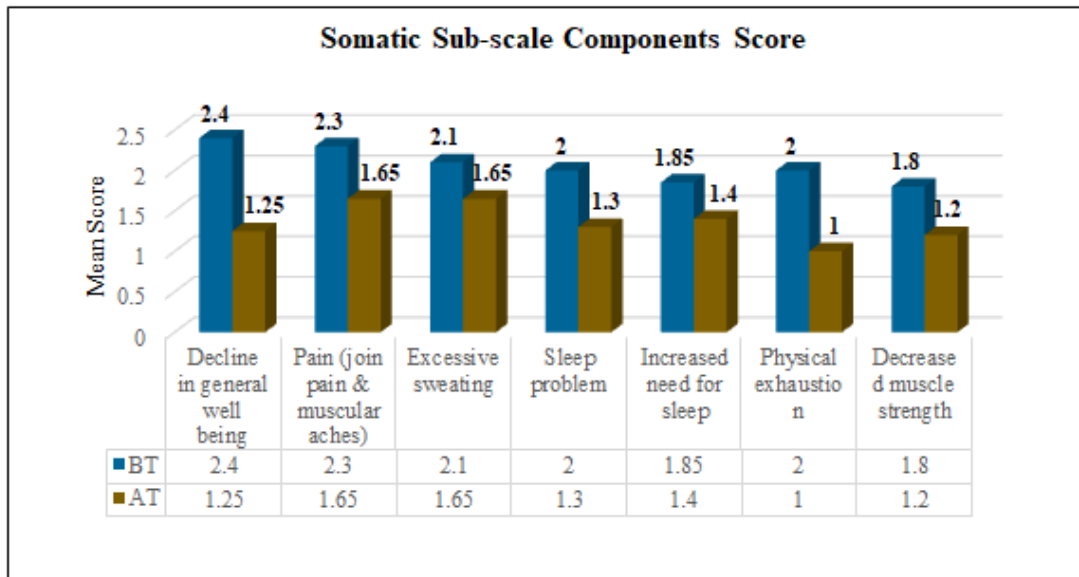


Figure 3. Mean BT and AT scores of somatic sub-scale components.

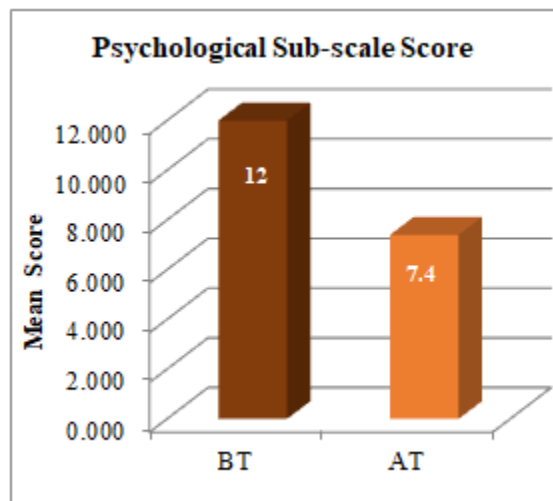


Figure 4. Mean BT and AT score of psychological sub-scale.

4. Discussion

In Testosterone Deficiency, the vitiated *Vāta* and *Pitta* *Dōsa* take *Sthana Samsraya* in the *Viguna Sukravahasrotas* causing the symptoms like *Dorbalyam*, *Mukha Sosa*, *Agni Sadanam*, *Srama*, *Sukra Avisarga*, *Klaibyam* along with its functional impairment. The treatment approach necessitates the removal of *Śrotōvigunata* and improving the quality of *Śukra*. The *Samprapti Vighātana* in this condition is attained by correction of *Agni* by *Pacana-*

Dipana, *Vata-Pitta Samana* and *Śukra Dhatu Posana* (improving *Śukra Sārata*). This is achieved through the treatment approach of *Rasāyana* which acts at the level of *Agni*, *Śrōtas* and *Dhātu*. As *Rasāyana Prayōga* is always preceded by *Śōdana* which include *Pācana - Dīpana* and *Abhyantara* and *Bāhya Snēhana* and *Swēdana*, here the treatment protocol consists of *Pācana - Dīpana* with *Aṣṭacūrṇa*⁷; *Ābhyantara Snēhana* with *Kalyāṇaka Ghr̥ta*⁸; *Bāhya Snēhana* (*Sarvāṅga Abhyanga* with *Tila Taila*) and *Swēdana* (*Bāṣpa Swēda*); *Kōṣṭha Śōdana* with *Gandharva Ēranda Taila*⁹ and *Rasāyana Prayōga* with *Nārasimha Rasāyana*¹⁰.

Aṣṭacūrṇa is *Kaṭu Tikta Rasa Pradhāna* and possesses *Uṣhṇa Virya*, *Laghu Tikṣṇa Guṇa* and has *Vāta Kapha Samana* property. All the drugs have *Dīpana* and *Pācana* properties which effectively correct the *Mandāgni* and promote proper metabolism. *Kalyāṇaka Ghr̥ta* being a *Tridōṣaśamana Aushadayōga* having action over both *Sarīra* and *Manas* with a special affinity towards fertility with its *Vṛṣya*, *Dīpana*, *Balya*, *Środōśōdhana* and *Medhya* action is thus administered for *Snēhapana*. *Bāhya Snēhana* is done with *Tila Taila* which possesses *Sūkshma*, *Tikshna*, *Uṣhna*, *Vyavāyi* and *Viśada Gunas*¹¹ and is followed by *Bāṣpa Swēda* which possess *Uṣhna*, *Tikshna*, *Sūkshma* and *Sara Guna*. *Gandharvahasta Ēranda Taila* is administered for *Kōṣṭha Śōdhana* as it is found to have *Vatanulomana*, *Vṛṣhya* (*Śukra Śōdhana*), *Śrōtōgāmi* and *Mala Śōdhana Karma*, along with its affinity towards the *Śukravaha Śrōtas*.

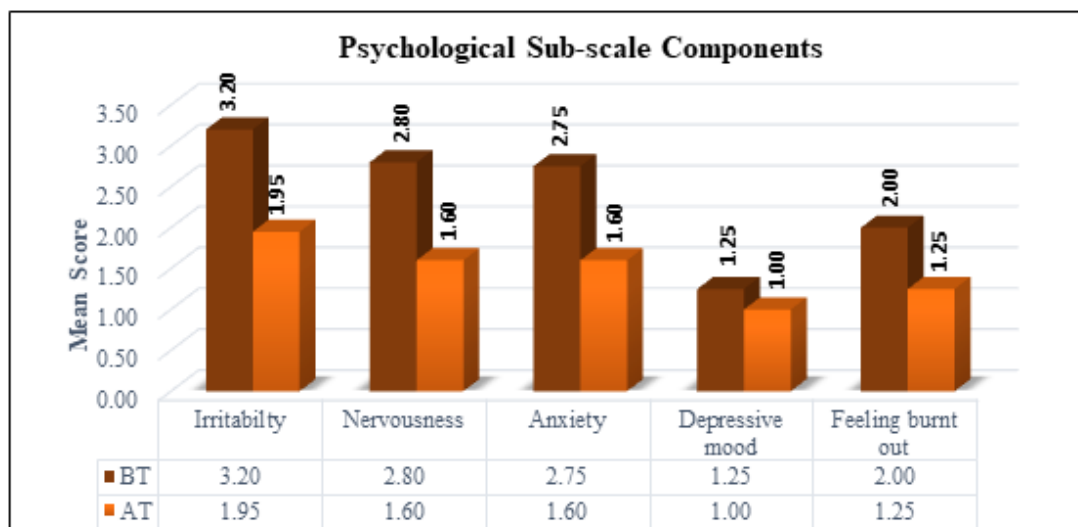


Figure 5. Mean BT and AT score of psychological sub-scale components.

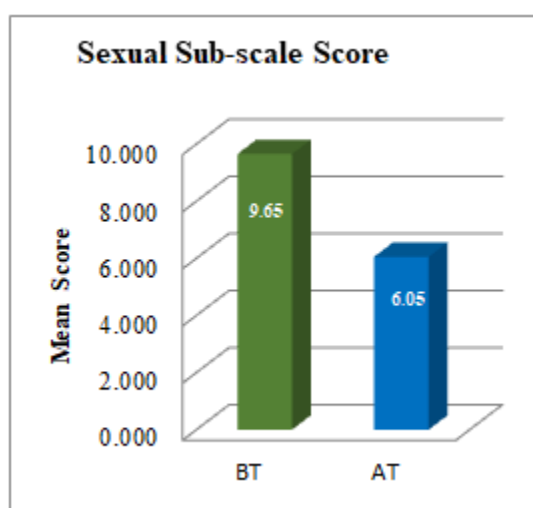


Figure 6. Mean BT and AT score of sexual sub-scale.

Prior *Kōṣṭha Śōdhana* is of utmost importance in *Rasāyana Prayoga* as it determines the efficacy of the administered formulation (*Rasāyana Dravya*)¹². The probable mode of action of *Nārasimha Rasāyana* on various domains in testosterone deficiency is detailed below.

4.1 Somatic Domain

The *Balya*, *Māmsa-Asthi Pushtikara* (*Vanamahishaḥbala*) and *Anga Dhārdhyakara Karma* (*Sthirāṅga*) of *Nārasimha Rasāyana* increase the musculoskeletal mass and

strengths and pacifies the *Vāta Dōṣa* responsible for various types of *Ruja*. Sleep disturbances (*Nidra Bramśa*¹³ or *Alpa Nidrata*¹⁴) seen in *Vāta* and *Pitta Vriddha Avastha* are normalized by its *Vāta Pitta Śamana* action. The manifestation of excessive sweating is ameliorated by the *Vāta Pitta Śamana* action along with the *Medōhara Karma*¹⁵ of the drugs in *Nārasimha Rasāyana* (as *Sweda* is *Medōdhātu Mala*).

4.2 Psychological Domain

The *Vāta-Pitta Śamana* action helps in pacifying the aggravated *Pitta* responsible for the manifestation of irritability. *Nārasimha Rasāyana* with the virtue of its action makes the person pleasing and gentle (*Madhusurabhi Mukham*) thereby reducing irritability.

The *Ōjokshaya Lakshanas* as *Bibhēti*, *Durmana*, *Dhyāyati*¹⁶ can be compared with presentations of nervousness, anxiety and the altered state of mind causing depressive symptoms. The action of *Nārasimha Rasāyana* over *Agni* (*Supāṭuhutavaha*;) imparts *Ōjas*¹⁷ along with its action over *Mēdha* and *Dhī* (*Mēdha Dhī Samṛddha*;) corrects this condition.

Feeling burnt out and feeling to have passed the peak of life can be understood under the purview of *Balahani*¹⁸ - interpreted as '*Utsāhahāni*' (the impairment in physical strength - *Vāta Vriddhi*) and *Ōjohāni* (*Pitta Vriddhi* - i.e., the impairment in immunological strength). *Nārasimha Rasāyana* having *Vāta Pitta Śamana* action imparts *Bala* by correcting the physical strength (*Vanamahishaḥbala*,

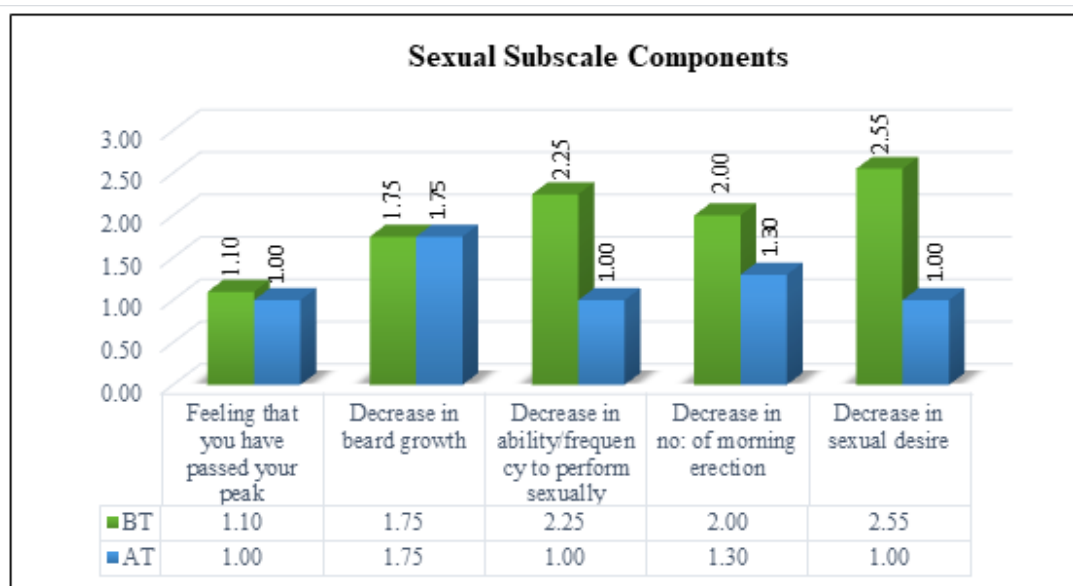


Figure 7. Mean BT and AT score of sexual sub-scale components.

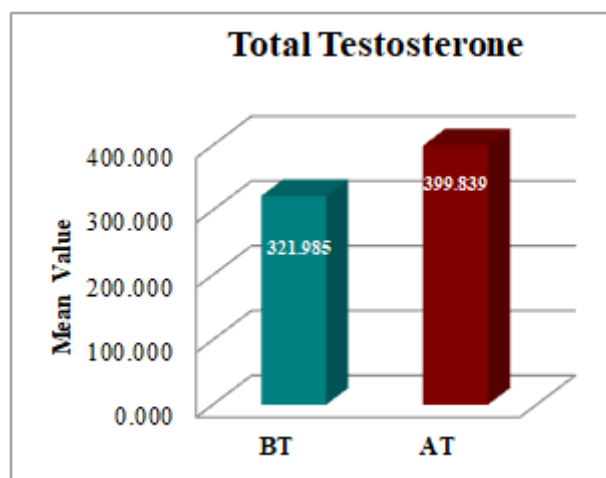


Figure 8. Mean BT and AT value of total testosterone.

Vājivēga, *Sthirāṅga*) and immunological strength or *Ōjas* (*Vyādhaya: na sprśantyaṇi*) and thus improves this condition.

4.3 Sexual Domain

Sexual frequency is determined by the physical health and psychological factors of an individual¹⁹. *Nārasimha Rasāyana* with its activities over the somatic, psychological, and immunological levels improve physical and psychological health.

The decrease in the number of morning erections indicates aspects of *Klaibya* and the decrease in sexual

desire with *Prētiḥāni* caused by *Śukra Kshaya*. *Nārasimha Rasāyana* having more affinity towards the *Śukravaha Srotas* corrects the *Śukravaha Srotadushti* and aids in the attainment of its functions (*Prākṛta Karma*) viz *Chavana*, *Preeti*, *Harsha*, *Dhairya* and *Dehabala*. This corrects the sexual symptoms experienced by the individual having testosterone deficiency/*Śukra Kshaya* (*Na Ēka Yoṣṇiṣēvī*).

4.4 Serum Total Testosterone

Testosterone can be compared with the *Sarva Śarīragata Śukra* owing to the similarity in their functions. *Nārasimha Rasāyana* improves this *Sarva Śarīragata Śukra* which is evidenced by the reduction in the symptoms of the subjects.

Śukra being *Soumya* and this condition being *Vāta Pitta Pradhāna* is managed by the *Vāta Pitta Śamana* action of *Nārasimha Rasāyana*. This formulation possesses a specific affinity towards the *Śukravaha Srotas* resulting in the correction of its *Vigunata* and thus its proper functioning.

As the rate of transformation of *Dhātus* depends on the status of *Agni*, the drugs having action at the level of *Agni* aid in the active transformation of *Dhātus*²⁰. The drugs in *Nārasimha Rasāyana* possessing *Uṣṇa*, *Laghu*, *Rūksha*, *Kaṭu*, *Tikta Rasas* kindles *Agni* and efficiently help in the transformation of *Ahara* to *Śukra Dhātu* thereby causing the improvement in *Śukra*.

5. Conclusion

This treatment protocol helped in the correction of the somatic, psychological, and sexual domains along with improving testosterone values in the individual with TD with a statistical significance of p-value <0.05. This effect of NR in TD can be contributed to the anabolic, immunomodulating, antistress, adaptogenic, nootropic, and antioxidant effects of the drugs in the formulation.

6. Confidentiality

The data collected were coded to maintain confidentiality.

The Institutional Ethics committee approved the study with the number IEC-AIMS-2019-AYUR-141 and CTIRI Reg.no: CTIRI/2020/01/022720.

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