

Naturopathic detoxification: Ancient techniques for improving body composition and overall wellbeing

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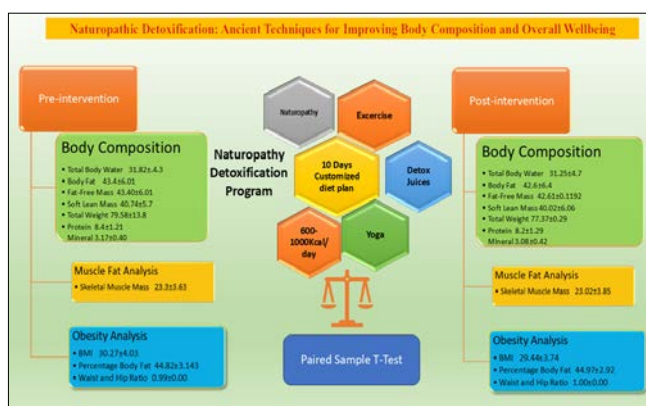
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Abstract

The present study aimed to evaluate the impact of a unique naturopathic detoxification program on body composition and related physiological parameters. It focuses on ancient practices like Ayurveda and is distinct in its integration of dietary changes, detox juices, and yoga to promote health and well-being. An evidence-based case-control study design involved seven participants who adhered to a 10-day naturopathic detoxification regimen. A customised meal plan (600-1000 kcal/day), detox juices, yoga, and other natural remedies were included in the treatment. Pre- and post-treatment measurements included total body water, body fat, fat-free mass, skeletal muscle mass, protein, minerals, and various obesity parameters. Paired sample t-tests were conducted using SPSS version 20 to assess changes in body composition. The intervention significantly changed body composition and physiological parameters. The fat-free mass showed significant reductions ($p < 0.05$). Body mass index also decreased significantly ($p < 0.01$). However, reductions in total body water, soft lean, body fat mass, protein content, per cent body fat, and waist-to-hip ratio were not statistically significant. These findings suggest that while some parameters improved markedly, others did not show substantial changes. The naturopathic detoxification program effectively improved several aspects of body composition, including reductions in BMI, alongside increases in fat-free mass and minerals. These findings highlight the potential benefits of integrating naturopathic detoxification with traditional medical care to enhance health and well-being. However, the study also underscores the crucial need for further research to elucidate the mechanisms behind these effects and determine the long-term benefits and potential risks associated with such treatments, emphasising the importance of ongoing scientific inquiry in naturopathy and the need for continued exploration in this field.

Keywords: Naturopathic detoxification, Panchakarma, body composition, Ayurveda, body mass index, skeletal muscle mass

Introduction



Naturopathic detoxification, also known as 'Panchakarma' in Ayurvedic medicine, is an ancient practice deeply rooted in Indian culture. It has been used for centuries to promote overall health and well-being (Conboy *et al.*, 2009 & Vinjamury *et al.*, 2012). This transformative, holistic approach, which leverages natural techniques to remove toxins from the body, improve body composition, and enhance physical and mental performance, is a testament to the enduring wisdom of conventional Indian medicine practices, such as Ayurveda and Unani (Pandey *et al.*, 2013^[3]; Mukherjee *et al.*, 2016^[6]). The potential benefits of these practices in enhancing health and well-being are not only

promising but also inspiring. They can foster a sense of optimism for their application in healthcare.

Naturopathic detoxification is a comprehensive approach encompassing ancient techniques deeply rooted in nature. These techniques, including dietary modifications, herbal treatments, hydrotherapy, and other natural remedies, have been used for centuries in various cultures. They work together to remove toxins from the body, improve metabolic function, and enhance overall well-being. Proponents argue that these methods can effectively reduce body fat, improve muscle mass, and balance hydration levels, contributing to better health outcomes (Langmead & Rampton, 2006; Khalil, 2017)^[6, 16]

A key component of naturopathic detoxification is a detox diet, which involves eating foods that support the body's natural detoxification processes. These foods, including juices and soups of leafy greens, berries, bitter gourd, green salads, and omega-3-rich foods, are carefully selected to provide essential nutrients while sidestepping foods high in sugar, salt, and unhealthy fats. This diet plays a crucial role in detoxification, promoting overall health and well-being (Martín *et al.*, 2017^[6]; Ayar, K., 2023)^[8].

Detoxification therapy, prescribed to treat various health issues, helps reduce weight, BMI, body fat percentage, waist-to-hip ratio, and waist circumference (Martín *et al.*, 2017)^[6]. It strongly emphasises the role of yoga and exercise in promoting detoxification and overall health (Rawat *et al.*, 2024)^[10]. Yoga, with its ability to stimulate the lymphatic system, improve circulation, and reduce

stress, and exercise, which can help to sweat out toxins, improve cardiovascular health, and boost mood, are integral parts of this holistic approach. As the body detoxifies, individuals may experience changes in body composition parameters, such as weight loss, increased muscle mass, decreased body fat percentage, improved skin tone and texture, and enhanced energy and endurance (Jung *et al.*, 2020) that emphasize physical activity can inspire and encourage individuals to perform an active part in their health and well-being.

Additionally, it is essential to note that while naturopathic detoxification may improve symptoms of chronic diseases, it also carries potential risks. These include high energy, which can lead to vitamin and protein deficiencies, loss of beneficial gut flora, and, in rare and untreatable cases, even mortality (Aziz *et al.*, 2024). However, the present study aimed to assess the effect of the naturopathic detoxification diet on the body composition of case study patients.

Methods and Materials

The present evidence-based case-control study examined the effect of an ancient naturopathy detoxification dietary treatment on body composition in seven individuals. The study was structured, with participants recruited based on their willingness to take part and ability to adhere to the 10-day dietary treatment, with no significant medical conditions that may affect body composition. Participants' body composition was initially measured using total body water, body fat, fat-free mass, soft lean mass, protein, and minerals. Skeletal and body fat mass were examined to evaluate muscle fat analysis, and BMI, percentage body fat, and waist-hip ratio were measured to assess obesity. Each participant received a customised ancient naturopathy meal plan ranging from 600 to 1000 kcal, including detox juice, yoga, and diet. Body composition, muscle mass, and obesity were analyzed post-treatment. To examine the improvement in body composition, a paired sample t-test was used with the help of SPSS version 20.

Table 1: Customised diet plan for case study samples

Early Morning (7:30 AM)	Morning (9:00 AM)	Lunch (1:00 PM)	Evening (4:00 PM)	Dinner (6:00 PM)
Ash gourd juice Amla ginger juice Green juice (cucumber, coriander, mint) Beetroot juice, Bitterguard peel, Wheatgrass juice	Papaya/Apple/Pomegranate/Pear/Avocado/Berries/ Soaked dry fruits (dates-2, almond-2, raisins-2, walnut-2, pista-2, cashew-2, fig-1) Seeds: chia seeds, flax seeds, sesame seeds- 1 spoon. Blend all of them and add hot water. Consume it on alternate days. Millet-based breakfast, eggs Dosa/idli/khichdi once a week	One bowl of rice/millets/wheat/jowar/ragi, one bowl, two bowls of boiled vegetables with green leaves Any pulse sabzi (soya bean/ rajma/ peas/ green gram/ Bengal gram/ground nut) One glass of rasam/buttermilk with ginger, jeera, methi (fenugreek) (If you are consuming nonveg, make sure you consume only during lunch)	Tender coconut water/ herbal tea Roasted pulses sprouted gram Aloe vera Ginger Juice Lemon Mint juice	One bowl of fruit, boiled/ Sauteed- Vegetables +Pulses Sabzi One bowl of fruit - Papaya/ watermelon/orange/ mousambi/ muskmelon/ pineapple 1 Soup (any vegetable) Poha/upma/oats
Medicated Water Coriander+ Fennel+ Tulsi + Hot Water				

Results and Discussion

Table 2: Effect of Naturopathy Detoxification Therapy on Body Composition

Parameters		Mean $\pm$ SD		t value
		Pre	Post	
Body Composition Analysis	Total Body Water	31.82 $\pm$ 4.3	31.25 $\pm$ 4.7	2.424
	Body Fat Mass	43.4 $\pm$ 6.01	42.6 $\pm$ 6.4	0.722
	Soft Lean Mass	40.74 $\pm$ 5.7	40.02 $\pm$ 6.06	2.43
	Fat-Free Mass	43.40 $\pm$ 6.01	42.61 $\pm$ 0.1192	2.48
	Total weight	79.58 $\pm$ 13.8	77.37 $\pm$ 0.29	4.09
	protein	8.4 $\pm$ 1.21	8.2 $\pm$ 1.29	1.92
	mineral	3.17 $\pm$ 0.40	3.08 $\pm$ 0.42	1.96

Table 2 shows changes in various aspects of body composition following the intervention. Total body water (pre 31.82 $\pm$ 4.3 and post 31.25 $\pm$ 4.7) showed a non-significant decrease, as evidenced by a t-value of 2.424, at $p > 0.05$. A slight reduction in total body water might be attributed to the short duration of the intervention, as studies have demonstrated that dietary and physical activity interventions can reduce total body water due to changes in weight and composition (Armstrong *et al.*, 2012; Ferrarese *et al.*, 2018). Additionally, a diet may have contributed to a decrease in water retention by promoting the elimination of toxins and excess fluids from the body. Additionally, the customised diet plan focuses on whole, nutrient-dense foods

and avoiding processed and high-sodium foods, which may decrease inflammation and improve digestion, reducing water retention. Furthermore, the diet's emphasis on diuretic herbs and foods may have increased urine production, decreasing total body water. Lastly, weight loss from the diet may also have reduced total body water, as body water is often proportional to body weight. Overall, the combination of these factors likely resulted in an insignificant decrease in total body water, leading to improvements in body composition.

The reduction in body fat mass (pre-43.4 $\pm$ 6.01 and post-42.6 $\pm$ 6.4) was not statistically significant (t-value of 0.722). A minute reduction in body fat mass does not lead to

substantial reductions in body fat without significant lifestyle changes (Jakicic *et al.*, 2008), leading to a decrease in body fat mass by enhancing liver function, promoting lymphatic drainage, reducing inflammation, improving gut health, supporting kidney function, regulating hormones, and increasing fat burning. The diet improves fat metabolism by removing toxins, excess hormones, and metabolic byproducts, decreasing body fat mass. Additionally, the diet's anti-inflammatory effects mitigate chronic inflammation, a known contributor to obesity and fat retention. The treatment diet's focus on gut health enhances nutrient absorption, reduces toxin absorption, and increases fat burning. Furthermore, the diet's influence on hormonal balances, such as insulin, cortisol, and thyroid hormones, improves fat metabolism and reduces fat storage. Overall, the detoxification diet's comprehensive approach leads to a reduction in body fat mass, resulting in improved body composition and overall health.

Soft lean mass (pre-40.74±5.7 and post-40.02±6.06) showed non-statistically substantial decreases, with t-values of 2.43 and p>0.05. In contrast, the fat-free mass of 2.48 was found statistically significant (pre-40.02±6.06 and post-42.61±0.1192), with a statistically significant difference (t value 2.48), indicating a significance level at p<0.05. These findings may be attributed to various factors, including caloric restriction, muscle glycogen depletion resulting from carbohydrate restriction, increased protein catabolism, and specific physical activities that can lead to muscle loss. Furthermore, hormonal changes may have contributed to the decline in fat-free mass (Ler & Cunliffe, 2006) [16]. However, it is essential to note that the diet's anti-inflammatory effects play a significant role in reducing muscle inflammation and decreasing fat-free mass, thereby contributing to the overall impact of the diet on body composition.

Total body weight (79.58±13.8 and post-77.37±0.29) was nearly significantly reduced with a t-value of 4.09, indicating a highly significant result at p<0.05. A significant reduction in body weight may be attributed to the diet's focus on promoting digestion, reducing inflammation, and enhancing detoxification, which contributes to improved nutrient absorption, reduced water retention, and increased fat burning, thereby further supporting weight loss. The findings suggest that the diet had a positive impact on weight management factors. Studies have also reported that weight loss programs involving dietary modifications and increased physical activity typically result in significant weight reductions (Karmore *et al.*, 2023) [17].

The decrease in protein content (pre-8.4±1.21 and post-8.2±1.29) and Mineral content (pre-3.17±0.40 and post-3.08±0.420) was not statistically significant (p>0.05), respectively. Findings suggest a minor reduction in protein levels, but this change was not statistically significant.

Table 3: Effect of Naturopathy Detoxification on Muscle Fat Parameter

Parameters		Mean ±SD		t value
		Pre	Post	
Muscle Fat Analysis	Skeletal Muscle Mass	23.3±3.63	23.02±3.85	2.34

Changes in muscle fat analysis shown in Table 3 that skeletal muscle mass (pre-23.3±3.63 and post-23.02±3.85) decreased significantly (t-value of 2.34), indicating no

significant level at p>0.05. The outcome demonstrates the diet's ability to maintain muscle mass and protein stores, likely due to its focus on whole, nutrient-dense foods and lean protein sources. The diet supported overall muscle health without compromising muscle mass by minimising muscle breakdown and promoting nutrient absorption (Apovian *et al.*, 2014).

Table 3: Effect of Naturopathy Detoxification on Obesity Analysis Parameters

Parameters		Mean ±SD		t-value
		Pre	Post	
Obesity Analysis	Body Mass Index (BMI)	30.27±4.03	29.44±3.74	3.92
	Per cent Body Fat (PBF)	44.82±3.14	44.97±2.92	-0.242
	Waist-to-hip ratio	0.99±0.00	1.00±0.00	-0.723

The effect of naturopathy detoxification treatment on Obesity analysis is depicted in Table 3 the body mass index (pre-30.27±4.03 and post-29.44±3.74) showed a significant decrease (t-value of 3.92), indicating a highly significant result at p<0.01. The changes in per cent body fat (44.82±31.43 and post-44.97±2.92) and waist-to-hip ratio (pre-0.99±0.00 and post-1.00±0.00) were not statistically significant, with t-values of -0.242 and -0.723, respectively. Longer or more intensive interventions may be necessary to produce substantial changes in these parameters (Ross *et al.*, 2000). The present study's results, consistent with existing literature, demonstrate significant reductions in total body water, soft lean mass, skeletal muscle mass, and BMI, with these changes reaching statistical significance at various levels. Other measures, such as body fat mass and waist-to-hip ratio, showed non-significant changes, highlighting the nuanced impacts of the intervention.

Conclusion

In conclusion, the study examined the effects of a naturopathic detoxification program on body composition and physiological parameters. The study resulted in significant improvements in body composition, including reductions in body fat mass, body fat percentage, and body weight, as well as increases in fat-free mass and minerals; there were also significant improvements in physiological parameters, including skeletal muscle and protein mass. The naturopathic detoxification program effectively improved body composition and physiological parameters, positively impacting overall health and wellness. The study focuses on dietary changes, supplements, and lifestyle modifications that may have contributed to the improvements in body composition. These findings suggest that naturopathic detoxification programs may be a valuable adjunct to traditional medical care for individuals seeking to improve their health and well-being.

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