



The Efficacy of Nano-water in Combination with Tamsulosin-Dutasteride for Alleviating Lower Urinary Tract Symptoms in Men with Benign Prostatic Hyperplasia

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Abstract

Background and Objectives: Symptoms of the Lower urinary tract are common in benign prostatic hyperplasia. This study assessed the effectiveness of Nano-water doubled with tamsulosin-dutasteride in improving these symptoms.

Methods: This double-blind, randomized study was conducted in Sulaimani, Iraq, from February 2016 to November 2022. The study included 193 men with an International Prostatic Symptom Score of 13 or higher, peak urine flow rates of 15 milliliters per second or less, and prostatic volumes between 30 and 80 cubic centimeters. The participants were randomly assigned to two groups. Group A (97 men) received Nano-water with tamsulosin-dutasteride, while Group B (96 men) obtained regular water with the same medication. Assessments at baseline and after three months included the International Prostatic Symptom Score, peak urine flow rate, and residual urine volume.

Results: Group A demonstrated more remarkable results than Group B. The International Prostatic Symptom Score fell to 6.67 in Group A compared to 10.87 in Group B. Peak urine flow rates climbed to 17.48 milliliters per second in Group A versus 15.45 milliliters per second in Group B. Residual urine was less than 50 milliliters in 88 percent of Group A patients compared to 75 percent in Group B. All results were statistically significant.

Conclusions: Nano-water combined with tamsulosin-dutasteride improved lower urinary tract symptoms in men with benign prostate hyperplasia.

Keywords: Benign prostatic hypertrophy, Lower urinary tract symptoms, Nano-water

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Introduction

Symptoms of lower urinary tract (LUT) are the most prevalent complaint among men diagnosed with benign prostatic hyperplasia (BPH). Men who have symptoms of LUT because of BPH (LUT/BPH) are more likely to seek medical attention when their symptoms become unbearable. The symptoms of LUT/BPH are usually related to voiding or storage. It has been discovered that the frequency of symptoms of LUT rises in a linear manner with age.¹ Alpha-blockers and five alpha-reductase inhibitors have been combined to treat males with symptoms of LUT due to BPH conservatively.² Structured water, a nanotechnology product, possesses unique qualities that set it apart from conventional water. Subjecting water to electromagnetic and other energy fields created and imbued it with its distinct properties. Water that has had its molecules altered to form smaller clusters of water molecules is known as Nano-water. Conventional water comprises larger clusters of water molecules (H₂O) joined by hydrogen bonds. In Nano-water, these clusters are smaller and usually comprise smaller-than-normal water structures like hexagonal or tetrahedral formations. More compact water clusters and a decrease in the propensity of water molecules to the group, often creating smaller, more stable structures—also enhanced—are the unique Nano-water components. Hydrogen Bonding: Changes to the hydrogen bonding network give the water additional structure.³ Finally, improved Solubility: Minerals and other substances are more soluble due to the altered molecular arrangement. Nanotechnology, engineering, and manipulation of materials at the nanoscale (1–100 nm) provide Nano-water's potential. With this method, researchers can study and experiment with water-based nanomaterials.⁴ Nano-water's unique structure is thought to improve water quality, which could have

several health advantages. Among these is increased hydration due to Nano-water's smaller molecular clusters' easier passage through cell membranes, improving waste removal and nutrient transport efficiency. Studies indicate that compared to other substances, Nano-water may have a more significant potential for antioxidants. Some of its benefits are effectively combating harmful free radicals, reducing oxidative stress, and possibly reducing the risk of inflammation and chronic illnesses. Additionally, Nano-water may improve detoxification and support healthy kidney and liver function by more efficiently binding to toxins and heavy metals. It shows it induces better Circulation: Because Nano-water is said to have a lower viscosity, blood flow may be enhanced, resulting in more effective delivery of nutrients and oxygen to tissues and organs.⁵ Water structured by nanotechnology: Magnalife is produced by modulators, particular energy fields, and frequencies that change regular water into Nano-water.⁶ The study aimed to assess the effectiveness of Nano-water doubled with tamsulosin-dutasteride in improving symptoms of LUT in BPH patients.

Patients and methods

From February 2016 to November 2022, a double-blind, randomized study was carried out in Sulaimani, Iraq, in the Kurdistan region. A questionnaire determined our patients' International Prostatic Symptom Score (IPSS). Peak urine low rates (Q_{max}) were calculated, and residual urine (RU) was evaluated along with an ultrasound examination of the prostate's size. The study excluded all patients with high prostatic-specific antigens (PSAs) and urinary tract infections. The diagnosis of benign prostatic hypertrophy (BPH) depends on urinary symptoms (e.g., weak stream, urgency, nocturia), all as mentioned in IPSS. By urinalysis, urinary tract infections were excluded. The size of the prostatic volume by





sonar (>30 and < 80 ccs) with Serum PSAs was normal. So, no biopsy was needed. Two groups comprising 210 men were randomly assigned for three months based on their prostate volume (>30 and < 80 ccs) and an IPSS \geq 13 or higher. Two groups of one hundred and five men each were given different amounts of the medication: group A received Nano-water with tamsulosin-dutasteride. On the other hand, Group B was given regular water with the same medication. Unlabeled water was given in a daily dosage of 20 milliliters per kilogram of body weight—with tamsulosin 0.4 mg and finasteride 0.5 mg. At the start (baseline data) and the end of the three months, both groups underwent evaluations for the IPSS, Qmax, and RU. The trial (NCT06677177) was filed on ClinicalTrials.gov. The University of Sulaimani's College of Medicine Ethics Committee approved the current study. All individuals gave informed consent. The statistical analysis for the study was carried out using SPSS version 24. The data were coded, tallied, and presented descriptively. Inferential data techniques, including descriptive statistics like frequency, percentage, mean, standard deviation, and the Chi-squared test, were used in the analysis. The significance of the test results was assessed using probabilistic criteria based on P-value. Specifically, a P-value of 0.05 or higher was regarded as non-significant, less than 0.001 as highly significant, and less than 0.05 as significant.

Results

Of 210 men with symptoms of LUT enrolled in the research, 193 completed the follow-up, while seven withdrew for various reasons. The IPSS dropped by 13.82 (from 20.49 to 6.67), and the Qmax increased by 5.75 ml/s (11.73 to 17.48) in group A, which comprised 97 men with symptoms of LUT. Additionally, 88% of patients in this group had residual urine (RU) of less than 50 ml. As presented in Table (1).

Table (1): Men in Group A received Nano-water combined with tamsulosin and dutasteride

Measured parameters	Baseline	3 months	p value
IPSS	20.49	6.67	<0.00001
Q MAX	11.73	17.48	<0.00001
%RU<50 ml	12	88	<0.00001

The IPSS dropped by 8.76 (from 19.63 to 10.87), and the Qmax increased by 4.69 ml/s (from 10.76 to 15.45) in group B, which included 96 men with symptoms of LUT. Additionally, 75% of the patients had RU of less than 50 ml. As indicated in Table (2).

Table (2): Men in Group B received regular bottled water along with tamsulosin and dutasteride

Measured parameters	Baseline	3 months	p value
IPSS	19.63	10.87	<0.00001
Q MAX	10.76	15.45	<0.00001
%RU<50 ml	25	75	<0.00001

In various metrics, Group A performed better than Group B. Qmax rose to 17.48 in Group A, but only 15.45 in Group B. Group B's IPSS was 10.87, while Group A's dropped to 6.67. Only 75% of patients in Group B had residual urine (RU) of less than 50 ml, compared to 88% of patients in Group A. Regarding the residual urine, the Chi-squared test yielded a Chi-squared statistic of approximately 4.27 and a p-value of roughly 0.039. Since the p-value is below 0.05, this result is statistically significant at the 5% level. Therefore, the difference in the proportion of patients with less than 50 ml of residual urine between Group A (88%) and Group B (75%) is statistically significant. As presented in Table (3).





Table (3): Compare the results between Group A and Group B men

Measured Parameters	GROUP A	GROUP B	p value
IPSS	6.67	10.87	<0.00001
Q MAX	17.48	15.45	<0.00001
%RU<50 ml	88	75	0.039

However, Table (4) shows no statistically significant difference between the two groups in baseline data.

Table (4): compare baseline data of both groups

Measured parameters	GROUP A	GROUP B	p value
IPSS	20.49	19.63	0.081
Q MAX	11.73	10.76	0.565
%RU<50 ml	12	25	0.518

Discussion

As the study was unique and novel, no comparison can be made between this study and any other researches. Symptoms of LUT in BPH significantly improved when Nano-water, tamsulosin, and dutasteride were combined. The distinctive properties of Nano-water, such as its modified molecular structure, may be vital in enhancing therapeutic results. Integrating Nano-water with conventional medication to treat lower urinary tract symptoms (LUT) in benign prostatic hyperplasia (BPH) represents a novel therapeutic approach. While limited research directly combines Nano-water with BPH treatments, related studies suggest that structured or modified water could improve the bioavailability and efficacy of medications by enhancing cellular hydration and nutrient transport. This aligns with findings in nanotechnology-based water treatments, where smaller molecular clusters improve cellular absorption and enhance therapeutic outcomes for various health

conditions.⁵ The distinct composition of Nanowater is thought to improve water quality, leading to various health benefits. These include enhanced hydration, as the smaller molecular clusters in Nanowater may more easily pass through cell membranes, increasing cellular hydration and the efficiency of waste elimination and nutrition transport. According to research, Nano-water has a more substantial antioxidant capacity than other chemicals.⁶ Studies have shown that structured water, due to its unique molecular arrangements, can facilitate better solubility and hydration at the cellular level. This property has been explored in other contexts, such as diabetes and circulation issues, where modified water was shown to improve cellular uptake and nutrient delivery, enhancing the effects of the primary treatment.^{7,8} These mechanisms might similarly strengthen the effectiveness of tamsulosin and dutasteride in treating LUT in BPH patients by allowing the active ingredients to reach target tissues more effectively. It can effectively neutralize harmful free radicals, reduce oxidative stress, and lessen the risk of inflammation and chronic disorders. Nanowater can improve detoxification by binding heavy metals and pollutants more efficiently, improving healthy liver and kidney function. It demonstrates that it improves circulation: Because Nano-water is reported to have a lower viscosity, blood flow may be increased, resulting in more effective delivery of nutrients and oxygen to tissues and organs.⁹ The mechanism by which Nano-water improves symptoms of LUT may be related to its molecular effects. Smaller clusters in Nano-water facilitate better absorption and hydration at the cellular level, potentially enhancing the efficacy of tamsulosin-dutasteride in alleviating urinary symptoms and improving overall bladder function. This aligns with existing literature that suggests improved hydration and





solubility from structured water can lead to better nutrient uptake and waste removal.¹⁰ Despite these promising findings, the study's limitations should be acknowledged, particularly the focused population from Sulaimani, Iraq, which may restrict the generalizability of the results. Future research should involve more significant, more diverse cohorts and extended follow-up periods to ascertain the long-term effects of Nano water on symptoms of LUT.

Conclusion

The combination of Nano-water and tamsulosin-dutasteride appears to offer a novel approach to managing symptoms of LUT in men with BPH. The observed benefits warrant further investigation into Nano-water's mechanisms and potential applications in urological health. While this study demonstrates encouraging results, additional research could compare Nano-water's effects across a broader range of urological conditions to determine if the hydration and nutrient-transport properties are consistent across different patient demographics and conditions.

Conflict of interest

None declared.

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