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## INTRODUCTION AND OBJECTIVES

- Antioxidants have long been used in the empirical treatment of infertile men. While a positive effect has been reported by a number of studies, others have failed to demonstrate any benefit leading to controversy regarding their efficacy in the treatment of infertility. The aim of the present study was to evaluate the effects of antioxidant combination therapy on conventional semen parameters and advanced sperm function tests in men seeking fertility.

## DESIGN

- Prospective clinical trial.

## METHODS

- 148 patients presenting with male factor infertility to a tertiary medical center with at least one abnormal semen parameter over a period of 6 months were included. Patients with varicocele, leukocytospermia, history of genitourinary infections, any febrile illness and exposure to chemo- radiation were excluded.
- All participants were treated with the antioxidant supplement FH-PRO (1000 mcg B12, 30mg Zinc, 140mcg Selenium, 350mg Arginine, 2000mg, 200mg Co-Q10, 120mg Vitamin C, 200IU Vitamins E) (Fairhaven Health, Bellingham, WA) for a period of 3 months. Semen analysis, sperm DNA fragmentation (SDF) (Halosperm kit, Halotech, Madrid, Spain), oxidation reduction potential (ORP) (MiOXSYS, Aytu BioScience, Englewood, CO) and hormones (estradiol, FSH, LH, prolactin, and testosterone) were performed on all participants initially and following treatment.
- Numbers (percentages) were used to report categorical values while mean  $\pm$  SE to report numerical values. Results were compared using Wilcoxon Signed Ranks Test and a p value of <0.05 was considered statistically significant.

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None  
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Supplement Facts	
Serving Size: 6 capsules Servings Per Container: 30	
Amount Per Serving	% Daily Value
Vitamin A (as beta-carotene) 5000 IU	100%
Vitamin C (as ascorbic acid) 120 mg	200%
Vitamin D3 (as cholecalciferol) 1200 IU	300%
Vitamin E (87.5% as d-alpha tocopherol succinate and 12.5% as mixed tocopherols) 200 IU	667%
Vitamin K (as 50% phytonadione (K1) and 50% menaquinone-4 (K2)) 80 mcg	100%
Thiamin (as thiamine HCl and benfotiamine) 3 mg	200%
Riboflavin (as riboflavin 5 phosphate) 3.4 mg	200%
Niacin (as niacinamide) 20 mg	100%
Vitamin B6 (as pyridoxal 5 phosphate) 25 mg	1250%
Folate (from 5-Methyltetrahydrofolate, Calcium) 800 mcg	200%
Vitamin B12 (as methylcobalamin) 1000 mcg	16667%
Biotin (as d-biotin) 600 mcg	200%
Pantothenic Acid (as d-calcium pantothenate) 20 mg	200%
Iodine (as potassium iodide) 150 mcg	100%
Zinc (as zinc citrate) 30 mg	200%
Selenium (as selenomethionine) 140 mcg	200%
Copper (as copper sulfate) 1 mg	50%
Manganese (as manganese bisglycinate chelate) 2 mg	100%
Chromium (as chromium picolinate) 120 mcg	100%
Molybdenum (as molybdenum glycinate chelate) 75 mcg	100%
L-Carnitine L-Tartrate 2000 mg	**
L-Arginine HCl 350 mg	**
CoQ10 (as ubiquinone) 200 mg	**
N-Acetyl L-Cysteine 200 mg	**
Grape Seed Extract 20 mg	**
Lycopene 10 mg	**
Benfotiamine 1 mg	**

\*\* Daily Value not established



Figure 1: The MiOXSYS analyzer and test strip



Table 1: Patient Demographics

	Minimum	Maximum	Mean	Std. Deviation
Age	20	50	35.91	6.560
Marriage years	1	29	6.90	5.174
Infertility years	1	24	5.85	4.258
BMI	18.92	43.09	29.6301	4.534

## RESULTS

- The mean age of study participants was  $35.9 \pm 0.5$  years and body mass index  $29.6 \pm 0.4$  Kg/m<sup>2</sup>. Compared to the pretreatment results, there was statistically significant improvement in conventional semen parameters including sperm concentration, total and progressive motility and normal morphology after 3 months of treatment with FH-PRO. Furthermore, a significant improvement in advanced sperm function tests (SDF & ORP) was also observed following antioxidant supplementation.

Table 2: Sperm parameters and sORP values (mv/10<sup>6</sup> sperm) in patients with idiopathic OAT (n=148). Pre & Post treatment values with Antioxidant combination therapy (FH-PRO)

Semen Parameters	Pre-treatment	Post-treatment
Volume (ml)	3.18 $\pm$ 0.12	3.12 $\pm$ 0.11
Concentration (10 <sup>6</sup> sperm/ml)	22.23 $\pm$ 2.01	30.57 $\pm$ 2.26*
Total Motility (%)	34.59 $\pm$ 1.43	38.47 $\pm$ 1.54*
Progressive Motility (%)	4.00 $\pm$ 0.61	8.06 $\pm$ 0.81*
Morphology (normal form %)	2.86 $\pm$ 0.19	3.98 $\pm$ 0.26*
DNA Fragmentation (%)	38.63 $\pm$ 2.10	32.04 $\pm$ 1.82*
sORP (mV/10 <sup>6</sup> sperm)	10.26 $\pm$ 1.29	6.21 $\pm$ 1.18*

\*p<0.05

## CONCLUSION

- Treatment of patients with idiopathic male infertility with FH-PRO antioxidant regimen for 3 months resulted in significant improvement in conventional semen parameters and advanced tests of sperm function. The antioxidant supplement offers great promise to the medical treatment of idiopathic male infertility.

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