



IS THERE A ROLE FOR ORAL ANTIOXIDANTS IN THE TREATMENT OF INFERTILE MEN WITH HIGH SPERM DNA FRAGMENTATION?

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Objective

Sperm DNA fragmentation (SDF) is an important function test showing inverse relation with spontaneous and assisted reproduction. Medical treatments to improve SDF with antioxidants have given controversial results. The objective of this study was to examine the effect of an antioxidant regimen on seminal oxidative stress (OS) and SDF.

Design

Prospective clinical trial

Material and Methods

101 infertile men with abnormal semen analysis were included in the study. A combined antioxidant supplement containing L-carnitine, CoQ10, Vitamin E, Lycopene, N-Acetyl-L-cysteine, and other nutrients (FH PRO, Fairhaven Health, Bellingham, WA) was prescribed 3 tablets twice daily for 3 months. Semen samples were analyzed before and after treatment according to WHO 5th edition. ORP (a marker of OS) was measured using MiOXSYS analyzer while SDF was measured using the Halosperm kit (cut-off: $\leq 30\%$).

Results

All patients (primary infertility: n=71; secondary infertility: n=30; mean duration: 5.9 ± 4.2 years; mean age: 35.7 ± 6.6 years) completed the trial. Compared with the pre-treatment results, there was significant increase in sperm count (from 23.1 ± 2.6 to 30.8 ± 2.8 , $p < 0.001$), progressive motility (from 4.1 ± 0.7 to 9.1 ± 1.1 , $p < 0.001$) and normal morphology (from 2.85 ± 0.3 to 4.62 ± 0.3 , $p < 0.001$). ORP decreased significantly from 12.2 ± 2.2 to 6.8 ± 1.6 mv/10⁶/mL ($p = 0.014$). SDF test was done in 72 patients of which 41 had elevated SDF before treatment while 31 were normal. In all patients, SDF significantly decreased from $36.3 \pm 2.3\%$ to $29.04 \pm 1.9\%$. Specifically, SDF decreased significantly in 35 out of 41 patients with high initial value (from 51.7 ± 2.2 to 33 ± 2.1 , $p < 0.001$). Further, SDF became normal in 17/41 patients (41.5%) with high SDF, while 43.9% (n=18/41) showed significant reduction, but were still high.

Table 1. Effect of treatment with FH-Pro on semen parameters

Semen Parameters	Before treatment	After treatment	P value
Semen volume (mL)	3.2 ± 1.5	3.1 ± 1.2	0.218
Sperm count (10^6 /mL)	23.1 ± 2.6	30.8 ± 2.8	<0.001
Progressive motility (%)	4.1 ± 0.7	9.1 ± 1.1	<0.001
Normal morphology (%)	2.85 ± 0.3	4.62 ± 0.3	<0.001
Sperm DNA fragmentation (%)	36.3 ± 2.3	29.04 ± 1.9	<0.001
Oxidation reduction potential (mv/10 ⁶ /mL)	12.2 ± 2.2	6.8 ± 1.6	0.014

Conclusions

Three months treatment with oral antioxidant supplement (FH PRO) resulted in significant improvement in sperm chromatin integrity as measured by SDF as well as a significant decrease in seminal oxidative stress. Improvement in ORP and SDF resulted in significant improvement in sperm count, progressive motility and normal morphology.

