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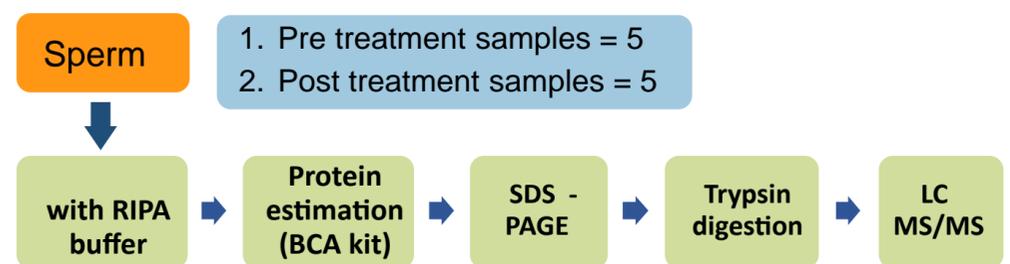
Introduction

- Antioxidant supplementation is one of the treatment options for idiopathic male infertility.
- However, its role in modulating spermatozoa at a molecular level has not been reported.
- The objective of this study was to evaluate the sperm protein profile of idiopathic infertile men before and after antioxidant supplementation.

Contents of the FH Pro for Men Supplement (per serving):	
Vitamin A (5000 IU)	Zinc (30 mg)
Vitamin B1 (3 mg)	Selenium (140 mcg)
Vitamin B2 (3.4 mg)	Copper (1 mg)
Vitamin B3 (20 mg)	Manganese (2 mg)
Vitamin B5 (20 mg)	Chromium (120 mcg)
Vitamin B6 (25 mg)	Molybdenum (75 mcg)
Vitamin B7 (600 mcg)	L-Carnitine L-Tartrate (2000 mg)
Vitamin B9 (800 mcg)	L-Arginine HCl (350 mg)
Vitamin B12 (100 mcg)	Co-Enzyme Q10 (200 mg)
Vitamin C (120 mg)	N-Acetyl-L-Cysteine (200 mg)
Vitamin D3 (1200 IU)	Grape Seed Extract (20 mg)
Vitamin E (200 IU)	Lycopene (10 mg)
Vitamin K (80 mcg)	Benfotiamine (1 mg)
Iodine (150 mcg)	

Experimental Design

- A prospective case-controlled study
- 'FH Pro for Men' antioxidant capsules were provided to idiopathic infertile men for a period of 6 months
- *In silico* analysis was done using IPA and Metacore platforms
- DEPs were validated by Western blot (WB) analysis
- Differentially expressed proteins (DEPs) were validated by Western Blot (WB) analysis



Results

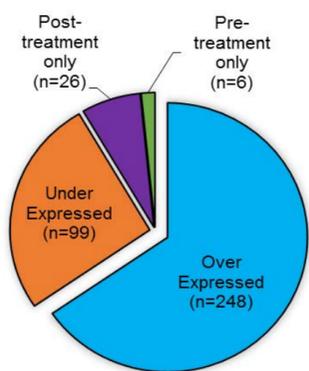


Figure 1: DEPs in idiopathic infertile men before and after antioxidant treatment

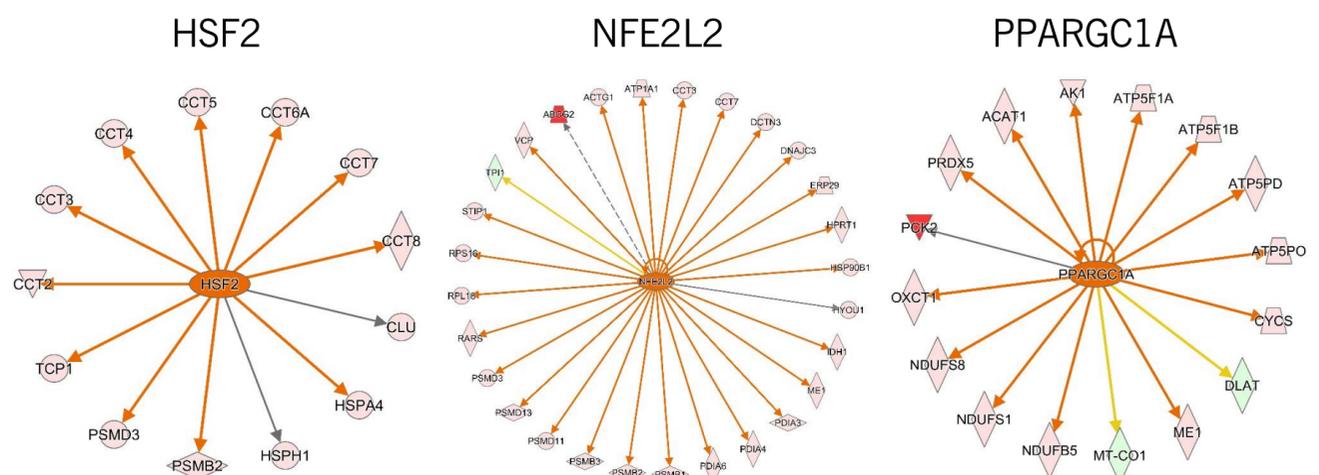


Figure 3: Upstream transcriptional factors involved in the regulation of DEPs

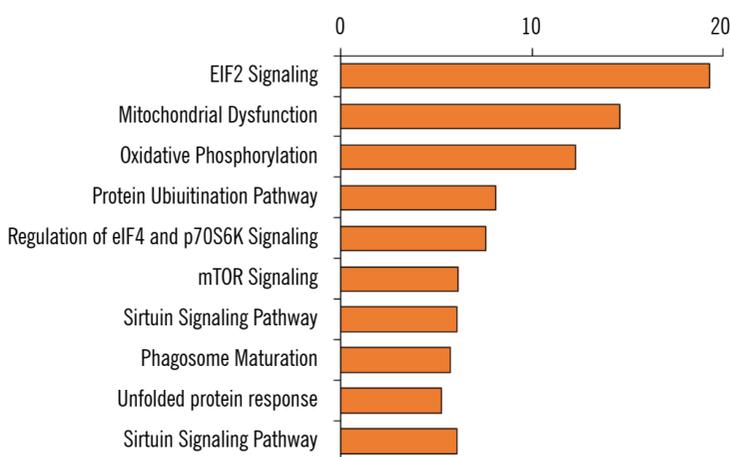


Figure 2: Top 10 enriched canonical pathways in idiopathic infertile men

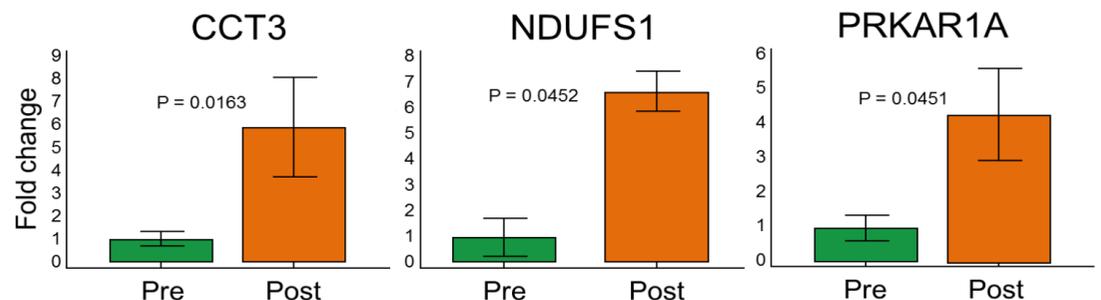


Figure 4: Western blot validation of DEPs

- Transcriptional factors associated with sperm motility and capacitation (PPARGC1A), and free radical scavenging system (NFE2L2 & HSF2) are activated (Fig 3).
- WB validation revealed overexpression of NDUFS1 (6.62 fold change, P=0.0163), CCT3 (5.91 fold change, P=0.0452) and PRKAR1A (4.24 fold change, P=0.0451) (Fig 4).

Conclusion

- This is the first report to demonstrate the alteration in sperm proteome in idiopathic infertile men after oral antioxidant therapy.
- Antioxidant supplementation of 'FH Pro for Men' in idiopathic infertile men had beneficial effects on sperm function proteins associated with fertility at a molecular level.

