

Research

The Effect of a Multi-Ingredient Supplement in Infertile Couple with Idiopathic Asthenozoospermia

Felice Crocetto MD¹, Pasquale Gallo MD², Domenico Varriale MD¹, Michele Giugliano MD¹, Biagio Barone MD¹, Lorenzo Spirito MD¹, Rosanna Esposito MD², Gabriele Saccone MD³, Gennaro Esposito RN³, Maddalena Turco RN³, Celeste Manfredi MD¹, Luigi Napolitano MD¹, Valerio Salamida RN¹, Lorenzo Romano MD¹, Tiziana Rotunno RN¹, Ciro Chervino RN¹, and Alfonso Falcone MD¹

¹Department of Neuroscience, Reproductive Sciences and Dentistry, School of Medicine, University of Naples Federico II, Naples, Italy

²ASL NA 2, Italy

³Department of Neuroscience, School of Medicine, University of Naples Federico II, Naples, Italy

*Correspondence to: Dr. Gabriele Saccone MD, Department of Neuroscience, School of Medicine, University of Naples Federico II, Naples, Italy; Email: gabriele.saccone.1990@gmail.com

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ABSTRACT

Objective

To investigate the effects of a novel multi-ingredient supplement, to improve semen quality in infertile couple with men with idiopathic asthenozoospermia.

Methods

This was an observational retrospective study. Men with idiopathic asthenozoospermia who received oral supplementation with a novel multi-ingredient supplement, containing N-Acetylcysteine (NAC) 600 mg and Coenzyme Q10 200 mg, were compared with men who did not. The primary outcome of the study was the incidence of asthenozoospermia after 3 months of treatment.

Results

200 men, 100 for each group, were included in the study. The two groups were similar in terms of maternal demographics, and both had similar BMI, and smoking. Men who received the intervention had a significantly lower incidence of asthenozoospermia compared to those who did not. No major side effects were reported.

Conclusion

Our cohort of infertile men showed that supplementation with NAC and coenzyme Q10 is a safe and effective supplement for men with idiopathic asthenozoospermia.

Keywords: *Supplementation; Infertility; Sterility; Men; Pregnancy.*

INTRODUCTION

Infertility and sterility are widespread global issues with a prevalence of about 20% of active couples.¹ Infertility is defined as the failure to establish a clinical pregnancy after 12 months of regular and unprotected sexual intercourse.² Several causes of infertility can be identified for both male and female. Environmental causes can also be identified like pollution or viruses,³ but male factors represent the most relevant ones, con-

tributing up to the 55% of the cases of couple infertility.⁴ Male infertility causes involve erectile dysfunction or alterations concerning ejection and quality of the semen, including absence (*azoospermia*), reduced quantity (*oligozoospermia*) or changes in sperm motility (*asthenozoospermia*) and morphology (*teratozoospermia*).⁵ Asthenozoospermia, in particular, has been described as one of the most important clinical conditions causing male infertility.⁶ It is defined as the decrease or lack of motile sperm in one ejaculate.⁷ Sperm motility can be studied invit-

ing the patient to perform a semen analysis. According to the World Health Organization, a normal motility in a semen sample is over 42% of motile sperm, while a patient can be diagnosed with asthenozoospermia when his semen sample shows less than the 32% of motile sperm.⁸ Asthenozoospermia can find its cause in various diseases among which varicocele, epididymitis, epididymis-orchitis, prostatitis and genetic mutations representing the most studied causes of asthenozoospermia at the moment. Genetic causes of reduced sperm motility may be found in the alteration of genes associated with sperm mitochondrial DNA, mitochondrial proteins, ion transport and channels, and flagellar proteins.^{9,10} Up to 30% of male infertility cases still have no identified cause and are still classified as idiopathic.¹¹

In blood samples of patients diagnosed for idiopathic asthenozoospermia elevated levels of reactive oxygen species (ROS) have been dosed,¹² so infertile men affected by idiopathic asthenozoospermia could benefit from a multifactorial approach treatment, including classical supplementation with antioxidant molecules like Coenzyme Q10.¹³

The aim of this study was to investigate the effects of a novel multi-ingredient supplement that provides to the patient many helping molecules in addition to Coenzyme Q10 and compare it to the classical Coenzyme Q10 alone therapy for semen quality improvement in infertile men diagnosed with idiopathic asthenozoospermia.

MATERIALS AND METHODS

This was an observational retrospective study, performed in a private setting. Data were collected in a dedicated encrypted database and anonymized. Men enrolled for the intervention group were treated with a novel multi-ingredient supplement (PSIPROTO FERT[®]) and they were compared to a control group. PSIPROTO FERT[®] contains the following molecules in one pill:

- Myoinositol 800 mg
- N-Acetylcysteine (NAC) 600 mg
- D-chiro-inositol 200 mg
- Coenzyme Q10 200 mg
- D-aspartic acid 150 mg
- Resveratrol 25 mg
- Bamboo 30 mg
- Zinc 10 mg
- Astaxantin 5 mg
- Selenium 100 mcg
- Manganese 5 mg
- Vitamin B6 2.5 mg
- Melatonin 1 mg
- Vitamin B12 100 mcg
- Folic acid 400 mcg
- Vitamin D3 50 mcg
- And mix of lactobacilli, including B. bifidum, L. crispatus and L. fermentum

The intervention was taken at the dose of three Capsules per day for

three months. The capsules are administered to ensure the functionality of trace elements and probiotics in conjunction with the main meals.

Inclusion criteria were: infertile male, defined as male in active couple with at least 12 months of regular unprotected sexual intercourse, with age between 18 and 45 years. Men with idiopathic asthenozoospermia were included in the study. Males with a known genetic cause of infertility and males with a known cause of asthenozoospermia, for example male previously treated for a bacterial prostatitis or an epididymo-orchitis or previously diagnosed for varicocele were excluded from the enrolled cohort. The intervention group was compared with a control group of infertile men matched with the intervention group for age and habits following the inclusion criteria, who received the classic therapy with daily Coenzyme Q10 in a dose of 200 mg/die.

The primary outcome of the study was the incidence of idiopathic asthenozoospermia after three months of treatment with the new supplement compared to the incidence of idiopathic asthenozoospermia after three months of treatment with the classic therapy with Coenzyme Q10.

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) v. 19.0 (IBM Inc., Armonk, NY, USA). Data were shown as means± standard deviation or as number (percentage). Dichotomous data were compared using the chi-square. Comparisons between groups were performed with the use of the T-test to test group means by assuming equal within-group variances. A sample size of 100 men for each group was planned.

RESULTS

200 men, 100 for each group were included in the study. The two groups were similar in terms of demographics, and both of them had similar BMI, and smoking habit.

Men who received the new multi-ingredient intervention showed a significantly lower incidence of idiopathic asthenozoospermia after three months of treatment (12% vs 65%; $p < 0.01$). No major side effects were reported in either group.

Notably, during the three months study period, 28 men belonging to the intervention group vs 6 men belonging to the control group ($p < 0.01$) reported a clinical pregnancy. However, the sample size was too small to run statistics.

DISCUSSION

Infertility, defined as the failure to achieve pregnancy after 12 months of regular unprotected sexual intercourse, affects 8.8% of US men aged 15 to 49 years and is often associated with significant physical and emotional stress.¹⁴ Major couple infertility causes concern both male and female sex.¹⁴ Among the most important female infertility causes we can find ovulatory dysfunction and anovulation, tubal infertility, endometriosis, diminished ovarian reserve, uterine and cervical factors, including uterine abnormalities and cervical scarring.¹⁵⁻¹⁷ Male factors also have a heavy impact on the total cases of couple infertility.¹⁸ Disorders of male sexual physiology, such as low testosterone blood levels or low sperm count, occur in 35% of infertile couples.¹⁹ Furthermore, the number of cases of male infertility linked to sperm motility disorders seems to be even higher, with asthenozoospermia representing a solid problem for couple infertility, in particular idiopathic asthenozoospermia, which represents a challenging problem due to its difficult therapeutic approach.²⁰ Therefore, studying new approaches and supplementations in the treatment of such patients is of paramount

importance for physicians.²¹ It has been seen in many studies which concern also other pathologies that an adjuvant can play an important role in disease management.^{22,23} With this work we tried to stress on a change of the therapeutical approach for idiopathic asthenozoospermia, using an innovative and tailored adjuvant. This work showed that a novel multi-ingredients supplementation is better in terms of incidence of asthenozoospermia in comparison to the classical Coenzyme Q10 alone supplementation.

This work presents many limitations: it is a retrospective observational study, so more prospective and randomized clinical trials are required to give a stronger relevance to the scientific findings, but this work can lay the foundations to a new multifactorial therapeutical approach to idiopathic asthenozoospermia, decreasing the cases of male infertility and giving a new possibility to treat a difficult and stressing clinical situation.

CONCLUSION

Our retrospective cohort of infertile men showed that PSIPROTO FERT® is a safe and efficacy supplement for men with idiopathic asthenozoospermia.

Future, large well-designed placebo-controlled randomized clinical trials are needed to confirm our findings.

CONFLICT OF INTEREST

None.

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