

# The use of vitamins in “causeless” male infertility

G. TODESCHINI, MD; M. SCIBONA, MD; P. ROSSI, MD;  
F. MENCHINI-FABRIS, MD; G.F. MENCHINI-FABRIS, MD

Andrologia Operating Unit, University of Pisa, Italia

## ABSTRACT

*In the last 30 – 40 years the human sperm is progressively getting worse and, regarding the spermatozoa production, this continues to depreciate. The progression velocity is always low and the percentage of anomalies increases in a truly impressive way. The causes of this situation are multiple.*

**Material and methods:** *We tested the effect of vitamins and anti-oxidants on 148 patients aged between 22 and 46 years (medium 36.5 years) with over 12 months of infertility.*

**Results:** *135 patients completed the study. They presented a progressive increment of the velocity up to  $25 \pm 3.6 \%$ , accompanied with the reduction of teratospermia until  $77 \pm 4.5 \%$ .*

**Conclusion:** *The present study, lead on a population of infertile patients with alterations of the motility, morphology and concentration of the spermatozoa (associated also with inflammation), demonstrated a benefit of vitamins and anti-oxidants in term of meaningful improvement of these parameters, in the presence of a good tolerability of the drugs.*

**Key words:** male infertility, vitamins

## BACKGROUND

It is well known that the human sperm, in the last 30-40 years, is gone progressively getting worse and, regarding the spermatozoa production, this continues to depreciate, the progression velocity is always low and the anomalies percentage increases in a truly impressive way (1, 2).

This situation is confirmed by the data of the World Health Organization (WHO), who

currently considers still acceptable a sperm that exhibits a percentage of anomalous elements that does not exceed 70%, a motility of 20 – 25 % after 2 hours from the emission and a minimal concentration of 20 million spermatozoa per milliliter.

The causes of this situation are multiple: the feeding (estrogen presence in the meat), the environment pollution, the increase of the radioactivity in the atmosphere, some conditions linked to the type of profession and the working

*Address for correspondence:*

Menchini Fabris Fabrizio, Prof. Andrologia, Studio Medico, Via Mazzini 7, Pisa, Italy  
email address: andrologia@ao-pisa.toscana.it

atmosphere, the inflammation (3) and the life style.

From many years our Operating Unit of Andrology of the Pisa University carries out a prominent role in the field of the male infertility. Every patient with this type of problems is accurately estimated from the hormonal, echographic and cytogenetic point of view (4). Approximately half (or more than a half) of these subjects with infertility turns out difficult to frame by means of a precise diagnosis (5, 6)

In fact the cases are not rare, in which we find ourselves faced with patients without appreciable hormonal or cytogenetical alterations, or echographical anomalies (i.e. hydrocele, varicocele and/or signs of cryptorchidism in action or past). These cases are however affected from oligo-astheno-teratospermia. Although we define them as "causeless", they are often associated to conditions like inflammation. (3)

This is the reason for which we tried to move our field of research in the direction of checking the ambient in which our patients live and work and on their life style. We are convinced of the negative influence that these factors exercise on the degree of fertility.

The attitude of the WHO was, in this last 30-40 years, to lower progressively the values of the seed parameters considered acceptable in order to obtain conception.

Regarding inflammation, rather frequent in our patients, our attitude was to convince them to modify their life style (reduction/abstention from smoking and even from drug consumption, to reduce the excess of café, alcohol and alcoholic drinks; to have an adequate diet and regularization of the intestinal transit and to follow the recommendations of the work medicine.

However these measures, alone, even having good effect, have not been sufficient to achieve the objective. In this moment we considered to introduce, in the medical therapy, the employment of vitamins and anti-oxidants (1, 7) which revealed useful in improving the metabolic performances of the spermatozoa and in reducing the inflammation state. We oriented our choice on drugs or aliments which contained arginine, L-carnitine, acetyl-carnitine, vitamin E, vitamin C, vitamin A, zinc, selenium, folic acid and others. □

## MATERIAL AND METHODS

We tested the effect of these substances on 148 patients aged between 22 and 46 years (medium 36.5 years) with over 12 months of infertility. Preliminarily these patients had anamnesis, a general and specific examination, a hormonal appraisal (FSH, LH, PRL, E2- total and free test), a scrotal and prostate transrectal Doppler echography and a sperm examination.

The admittance criteria to the therapy with anti-oxidants were:

- more than 12 months of infertility
- progressive motility of the spermatozoa (fast plus slow < 15%)
- percentage of spermatozoa anomalies about 85%
- totally normal hormonal values
- normal testicular volumetria (>12 ml)
- absence of obvious testicular pathologies (varicocele, hydrocele, cryptorchidism past or in action), but the presence of inflammation
- normality of the karyotype
- absence of concomitant therapies

All the patients with these inclusion criteria present received anti-oxidant therapies for a period of 9 months, having control sperm examination at a three months interval and always performed in our laboratory.

**The objective of our study** was to estimate the effectiveness of the therapy on the improvement of the parameters of the seed liquid (motility, morphology and concentration of the spermatozoa) and the appearance of pregnancies. Statistic analysis was performed by the STUDENT t-test and expressed by medium values +/- SD. □

## OUTCOMES

At the entrance in the study, the patients of this group had a mean concentration of spermatozoa of  $12.5 \pm 2.4$  million/ml, with a progression velocity of  $15 \pm 3.2$  %, associated to a percentage of teratospermia of  $90 \pm 4.5$  %.

135 patients completed the study. They presented a progressive increment of the velocity up to  $25 \pm 3.6$  %, accompanied with the reduction of teratospermia until  $77 \pm 4.5$  %. It was noted that the most frequent spermatozoa anomalies were localized at the cephalic

extremity. The parameter that appeared little influenced was the concentration of the spermatozoa, which that practically did not change.

Of the initial 148 patients, 6 have abandoned the study for unexpected pregnancy, while other 7 did not come to the next controls. □

## CONCLUSION

The oxidative damage on the reproductive function was the object of several "in vitro" and "in vivo" studies and seems to interest all the parameters of the liquid seeds, in particular motility and the morphology of the spermatozoa.

Various clinical studies demonstrated the effectiveness of the anti-oxidant therapy in

improving some seed parameters; however the greater part of the data indicates that a single agent is not capable to modify, in a consistent way, the fertilizing potential. The most promising seems to be the association of various micro-nourishing elements in an anti-oxidant therapy (15,16).

We have to notice that the present study, lead on a population of infertile patients with alterations of the motility, morphology and concentration of the spermatozoa (associated also with inflammation), demonstrated a benefit, in term of meaningful improvement of these parameters, in the presence of a good tolerability of the drugs. □

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