DBPC STUDY SHOWED SIGNIFICANT CORRELATION OF DEFRAGMENTATION INDEX (DFI) AND SEMINAL CARNITINE WITH PROGRESSIVE SPERM MOTILITY IN OLIGOSPERMIC MEN TREATED WITH METABOLIC AND ESSENTIAL NUTRIENTS

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OBJECTIVE
L-carnitine (L-C) and Acetyl-L-carnitine (ACL) are essential in transferring long-chain fatty acids and producing energy for spermatozoa and they have strong relationship with functional spermatozoal characteristics

MATERIAL AND METHODS
Analysis of ejaculate was done according to WHO 5th guideline. Progressive sperm motility (A+B grade of rapid, progressive) was done manually. DFI was evaluated by Halosperm kit (Halotech DNA, S.L.) and seminal carnitine by enzymatic UV test

RESULTS
The progressive sperm motility in the treated group demonstrated statistically significant difference, p<0.001 by Friedman test, in 3 different time periods: T0=28,00%(12,00±38,00), T3=30,00%(12,00±39,00) and T6=31,00%(20,00±41,00) FIG.1
DFI (%): T0=38,50 (32,00-48,75), T3=35,50 (25,50-44,00) and T6=31,00 (25,00-41,00)(Friedman test, p<0,001) FIG.2
The seminal carnitine at T0 was 724,60 μmol/L (625,50±800,50) and at T6=782,80 μmol/L (686,60±926,30), and this difference was significant (p=0,014, by Wilcoxon signed-rank test) FIG.3
The Spearman’s rank-order correlation test showed that the increase of seminal L-C level influenced the progressive sperm motility (R=0,274; p=0,023). Thus the correlation of seminal L-C and progressive sperm motility showed that in man, an increase of seminal L-C of 7,7%, after 6 months therapy, would impact progressive sperm motility >10% with moderate accuracy (AUC=0,713) FIG.4
Furthermore, if DFI drops by more than 3%, after 6 months of therapy, it can be expected, with moderate accuracy, that men would have sperm motility greater than 10% (AUC=0,793; p<0,001). DFI reduction (odds ratios=1,106 with 95% confidence intervals) independently of elevation of L-C increases the likelihood that sperm motility is >10%. There was no significant difference in placebo group in sperm motility, seminal L-C and DFI between T0 and T6. Pregnancy was obtained, in treated group in 21 cases and in 3 cases in placebo group.

CONCLUSION
The percentage of change in DFI after 6 months therapy can be used with moderate accuracy in detection of men with better sperm motility. Further, an increase of seminal carnitine positively impacted upon progressive sperm motility after therapy