Introduction: Sperm DNA integrity is a useful biomarker for male infertility diagnosis and prediction of assisted reproduction outcomes. Sperm DNA damage has been associated with poor embryo quality and lower pregnancy rates, as well as, higher rates of spontaneous miscarriage. Sperm DNA damage is often associated with poor embryo quality and lower pregnancy rates, as well as, higher rates of spontaneous miscarriage. Antioxidants are used to improve male fertility potentials. We studied a cohort of men presenting for infertility evaluation at the OVO Fertility between May 2016 and March 2017. From this cohort, we identified a sub-cohort of 20 consecutive infertile men that had a baseline sperm DNA test and were treated with an oral antioxidant. After 2 to 3 months of oral antioxidant treatment, these men underwent a second sperm DNA test. Sperm DNA fragmentation analysis was measured by TUNEL assay (4) and the results were expressed as % DNA fragmentation index (%DFI).

Methods: We studied a cohort of 366 men presenting for infertility evaluation at the OVO Fertility between May 2016 and March 2017. From this cohort, we identified a sub-cohort of 20 consecutive infertile men that were treated with an oral antioxidant supplement (Fertil Pro: 400 mg L-Carnitine, 300 mg vitamin C, 100 mg coenzyme Q10, 67 mg vitamin E, 30 mg zinc, 3 mg beta-carotene, 2 mg lycopene, 1 mg folic acid, 50 µg vitamin B12, 30 µg selenium and 25 µg vitamin D). After 2-3 months of oral supplement intake, these men underwent a second sperm DNA test. Sperm DNA fragmentation analysis was measured by a flow cytometry-based terminal deoxynucleotidyl transferase dUTP nick end labeling (TUNEL) assay and the results were expressed as % DNA fragmentation index (%DFI).

Results: We observed that oral antioxidant therapy was associated with a significant decrease in sperm %DFI (from 38.3 ± 2.7% to 26.8 ± 1.8%, respectively). Moreover, 95% of the men had a decrease in %DFI after treatment. However, mean sperm concentration and mean sperm progressive motility did not change significantly after oral antioxidant therapy (52 ± 1.8 to 54 ± 1.8% and from 48 ± 1.4% to 50 ± 1.4%, respectively).

Conclusions: Our data suggest that infertile men may benefit from oral antioxidant therapy with a significant reduction in sperm %DFI. Moreover, a high percentage of infertile men with elevated sperm %DFI will have a normal sperm %DFI after treatment. However, there is a need for randomized controlled trials to confirm these promising observations.

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Figure 1. The DNA fragmentation index (%DFI) before and after treatment in each one of the 20 men.

Figure 2. The mean % DFI (comparison before and after treatment).

ABSTRACT
Objective: The aim of the study was to evaluate the influence of an antioxidant supplement on sperm DNA integrity in a cohort of men with idiopathic infertility.

Methods: We studied a cohort of 366 men presenting for infertility evaluation and sperm DNA testing at the OVO fertility between May 2016 and March 2017. From this cohort, we identified a sub-cohort of 20 consecutive infertile men that had a baseline sperm DNA test and were treated with an oral antioxidant. After 2 to 3 months of oral antioxidant treatment, these men underwent a second sperm DNA test. Sperm DNA fragmentation analysis was measured by TUNEL assay (4) and the results were expressed as % DNA fragmentation index (%DFI).

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The aim of the study was to evaluate the influence of an antioxidant supplement on sperm DNA integrity in a cohort of men with idiopathic infertility.

RESULTS

Our data suggest that infertile men may benefit from oral antioxidant therapy with a significant reduction in sperm %DFI. Moreover, a high percentage of infertile men with elevated sperm %DFI will have a normal sperm %DFI after treatment. However, there is a need for randomized controlled trials to confirm these promising observations.

STATISTICS

Results were expressed as mean ± SEM. Each sperm %DFI was a mean of 2 sample runs. The comparison of the data obtained was performed using GraphPad Prism version 5.

We observed that %DFI decreased significantly after antioxidant therapy (from 38.3 ± 2.7% to 26.8 ± 1.8%, respectively), with 95% of the patients experiencing a reduction in their %DFI. Furthermore, 52.9% of men with a high initial %DFI (≥80%) had a DFI below 30% after treatment. The mean sperm concentration and mean sperm progressive motility did not change significantly after oral antioxidant therapy.