REGULAR COFFEE INTAKE IS RELATED TO INCREASED SPERM MOTILITY AND ANTIOXIDANT LEVELS IN INFERTILE MEN

F. F. Pasqualotto, E. B. Pasqualotto, F. M. Umezu, S. S. Allamaneni, M. Salvador, A. Agarwal; Universidade de Caxias do Sul and Conception, Centro de Reproducao Humana, Caxias do Sul, Brazil, Universidade de Caxias do Sul, Caxias do Sul, Brazil, Cleveland Clinic Foundation, Cleveland, OH

Objective: Reactive oxygen species play a significant role in the pathophysiology of male infertility. Superoxide dismutase (SOD) and catalase are important antioxidant enzymes that can quench excess free radicals such as: superoxide anion and hydrogen peroxide, respectively. It is established that sperm motility is higher in patients who regularly drink coffee compared to patients who don’t, however, the mechanism by which caffeine improves sperm motility is not known. The objective of our study was to evaluate and compare the seminal antioxidant enzymatic activity (SOD and catalase levels) among infertile men with the amount of regular coffee intake on a day-to-day basis. Design: Retrospective study at a tertiary care institution. Materials and Methods: The Institutional Review Board approved this study. Ten fertile donors and 112 infertile patients were included in the study. Patients were asked about the amount (mL) of regular coffee they drank daily. Semen analysis was performed according to the World Health Organization guidelines and sperm morphology by Tygerberg strict criteria. Superoxide dismutase and catalase levels were determined with a spectrophotometer. Results: A significant difference was noted in the amount of regular coffee drank daily between infertile (200.96 mL ± 46.8) and fertile men (360 mL ± 34.5; \( P = 0.043 \)). Significantly lower levels of SOD (14.67 ± 12.27 and 38.03 ± 21.65) and catalase (14.87 ± 16.95 and 34.03 ± 20.65) were seen in infertile patients compared to fertile donors (\( P <0.0001 \)). A significant correlation between catalase and SOD was observed (\( r = 0.461, P = 0.0001 \)). Sperm morphology by Tygerberg criteria was significantly correlated with the levels of SOD (\( r = 0.412, P = 0.0001 \)) and catalase (\( r = 0.315, P = 0.001 \)). Catalase levels were also correlated with sperm motility (\( r = 231, P = 0.042 \)). Coffee intake was correlated with catalase levels (\( r = 0.212, P = 0.027 \)), but not with SOD levels (\( r = 0.173, P = 0.058 \)). Patients who drank more than 250 mL of coffee on a daily basis had higher catalase levels (39.2 ± 16.2) compared to men who drank less than 250 mL of coffee (17.6 ± 9.2; \( P = 0.03 \)). Conclusion: The positive correlation between catalase levels, sperm motility and coffee intake on a day-to-day basis may suggest a possible
mechanism via caffeine for an increase in sperm motility in men who are coffee drinkers.
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