Title: Diagnostic value of the total antioxidant capacity assay in human seminal
plasma by receiver operating characteristic curve analysis

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Objective: Oxidative stress is involved in the pathophysiology of male infertility. Measurement of the total antioxidant capacity (TAC) may be helpful in the diagnosis of male infertility. Our aim was to identify a cutoff value, sensitivity and specificity of TAC in seminal plasma from donors and patients.

Design: Prospective-controlled study.

Materials and Methods: Seminal plasma was collected from proven fertile donors (n = 49) and infertile patients (n = 61) and antioxidant levels were measured by using the TAC assay kit. The cutoff value was established by receiver operating characteristic (ROC) curve.

Results: Proven fertile donors showed higher TAC values (median and range): 2100, 1700 –2,495 μM; compared to the infertile patients: 1288, 1075 –1443μM. The area under the curve was 0.958 (p <0.001). The best cutoff to distinguish between fertile controls and infertile men was 1586 μM. At this threshold, specificity was 85.0% and sensitivity was 100.0%. The positive and negative predictive values of this cutoff were high: 89.1% (41/46) and 10.9% (5/46), respectively.

Conclusions: Total antioxidant capacity of the seminal plasma as measured by the colorimetric assay is a highly valuable, reliable and simple test for the diagnosis and management of male infertility.

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