The influence of leukocytospermia on reactive oxygen species (ROS) formation in semen

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The presence of white blood cells (WBCs) in the semen has been associated with impaired fertility in some men. Likewise, the excessive generation of ROS has also been associated with male infertility. The objective of this study was to investigate the relationship between the presence of leukocytospermia as determined by the Endtz test and the excessive formation of ROS.

Methods
Reactive oxygen species formation was determined in a population of 62 men, 46 of whom were undergoing fertility evaluation and 16 apparent healthy donors. All specimens were assessed for ROS generation using whole semen samples. ROS was measured by the chemiluminescence method using luminol and a Berthold luminometer. Formation of ROS was regarded as positive when the value was $\geq 10 \times 10^4$ counted photons per minute (CPM). The presence of WBCs in the semen was determined by a peroxidase positive staining technique (Endtz test). A positive Endtz test indicated $\geq 1 \times 10^6$ WBCs/mL of semen.

Results
Of the 16 donors, only one was Endtz-positive and ROS-positive. Fifteen were Endtz-negative with two ROS-positive (13%). In the patient population (n=46), 18 patients (30%) were positive for ROS formation. Ten were Endtz-positive and found to be ROS-positive. The positive Endtz test results correlated strongly with positive ROS formation (P<0.001). Of the 36 Endtz-negative patients, only 8 (22%) were ROS-positive.

Conclusions
The Endtz test is based on the myeloperoxidase activity of the WBCs, which are the source of ROS generation in Endtz-positive semen. This test is inexpensive and easy to perform. Our results indicate that patients who are Endtz-positive have an increased formation of ROS in semen which may adversely affect their fertility potential.