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Evaluation of reference values of standard semen parameters in fertile Egyptian men

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Summary
The reference values of human semen, published in the WHO's latest edition in 2010, were lower than those previously reported. The objective of this study was to evaluate reference values of standard semen parameters in fertile Egyptian men. This cross-sectional study included 240 fertile men. Men were considered fertile when their wives had recent spontaneous pregnancies with time to pregnancy (TTP) ≤12 months. The mean age of fertile men was 33.8 ± 0.5 years (range 20–55 years). The 5th percentiles (95% confidence interval) of macroscopic semen parameters were 1.5 ml for volume and 7.2 for pH. The 5th percentiles of microscopic parameters were 15 million/ml for sperm concentration, 30 million per ejaculate for total sperm count, 50% for total motility, 40% for progressive motility, 62% for vitality, 4% for normal sperm forms and 0.1 million/ml for seminal leucocyte counts. In conclusion, fertile Egyptian men had higher reference values of sperm total motility, progressive motility and vitality, and lower reference values for total sperm counts as compared to those determined by the latest edition of the WHO laboratory manual in 2010. Other semen parameters were identical to those defined by the WHO 2010 manual.

1 | Introduction

Standard procedures of semen analysis are routinely used in most laboratories for initial evaluation of male fertility potential. These procedures include initial macroscopic examination of semen appearance, liquefaction, volume, viscosity and pH; and microscopic investigation of sperm concentration, motility and morphology; and assessment of seminal leucocytes and immature germ cells (WHO, 2010). Despite its weaknesses as a diagnostic tool, standard semen analysis allows for detection of remarkable cases of infertility such as azoospermia (Saleh et al., 2002). In addition, with repetitively abnormal semen analyses results, men can be diagnosed as infertile and an approximate prognosis can be given.

The methods of human semen evaluation are provided by the WHO, which periodically releases manuals including specific protocols and reference standards (Esteves, 2014). The WHO published its updated 5th edition of the laboratory manual for the examination of human semen in late 2010. This latest edition of the manual established reference values derived from data belonging to eight countries located in three continents from 1953 fertile men with a time to pregnancy (TTP) of <1 year (Cooper et al., 2010). The new reference values

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