Figure S1. Detailed design of the study of samples from fertile donors. The complete ejaculate was divided into a Control $_F$, Exp1 $_F$ and Exp2 $_F$ groups. The Control $_F$ group was processed without MW treatment, whereas the Exp1 $_F$ and Exp2 $_F$ groups were treated with MW irradiation, but Exp2 $_F$ was preliminarily centrifugated to separate the seminal plasma from spermatozoa, so that plasma and cells did not interact during the MW exposure. In the final step, all the samples were divided into seminal plasma and spermatozoa to explore the corresponding parameters in both fractions.

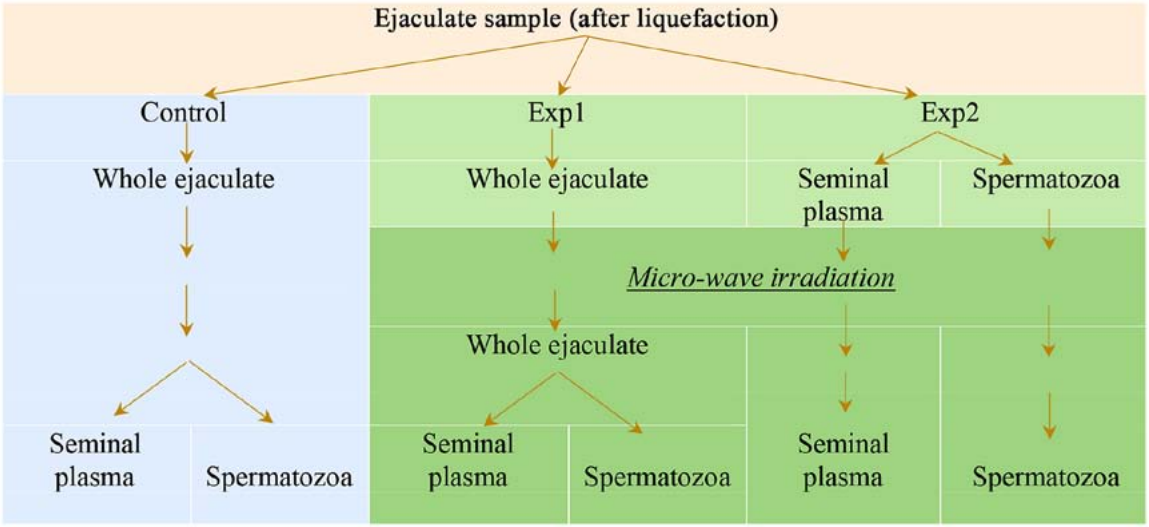

Figure S2. Evaluation of sperm cell motility and viability. The staining of sperm cells in (A) fertile and (B) subfertile samples with eosin is shown. The arrow indicates a live sperm, dead sperm colored with the eosin dye are depicted in a red-orange color. The number of dead cells in (B) subfertile samples is greater than that in (A) fertile samples. Magnification, x100.

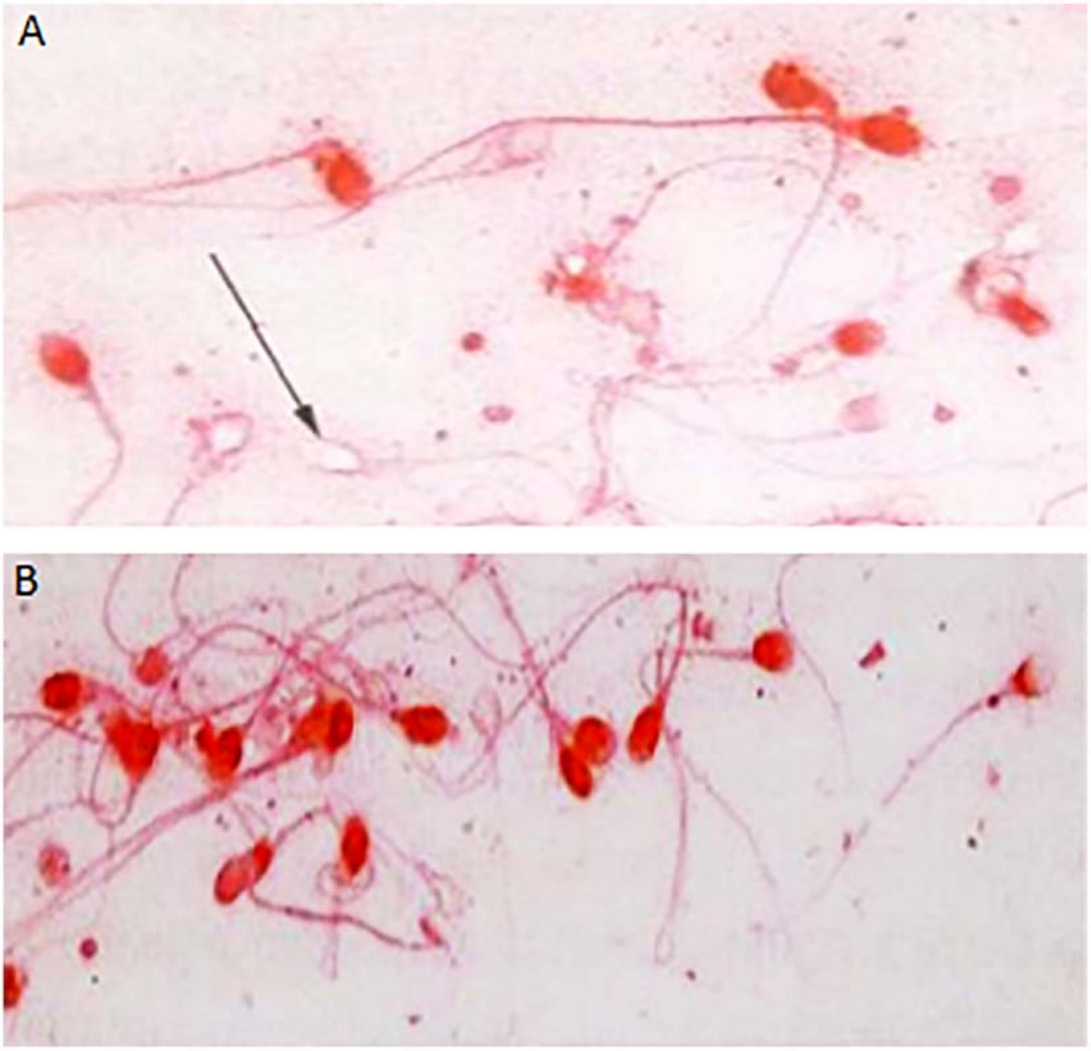

Figure S3. AnV+/PI-spermatozoa. The staining of gametes with Annexin V-FITC for the determination of apoptosis in (A and B) fertile and (C and D) subfertile samples is shown. Spermatozoa are visible in the luminescence light (A nd C, dark area) and in the transmitted light (B and D, light area). Green fluorescence indicates (AnV+/PI-)-gametes. (E and F) Sections demonstrate fertile samples before (control) and after (Exp1) the MW exposure, only round heads of atypical gametes are colored (F). Magnification, x100. AnV, Annexin V-FITC; PI, propidium iodide.

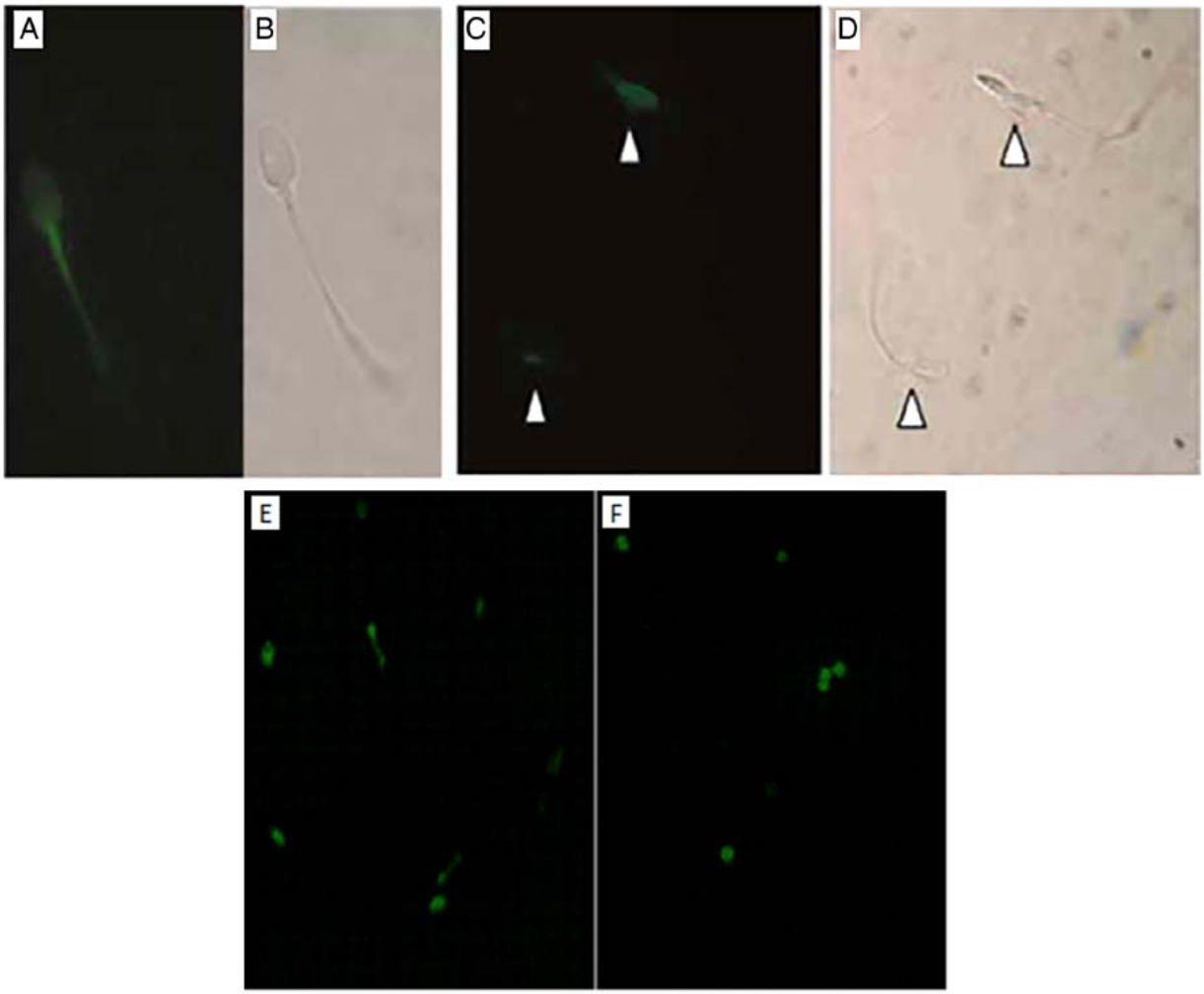

Table SI. Morphological characteristics of spermatozoa from fertile men before and after low-intensity millimeter-wavelength electromagnetic wave-exposure.[b]

	Spermatozoa,%[a]	
Spermatozoa pathological changes	Control	Exp1
Head pathology	63.0±4.9	63.2±5.1
Neck pathology	34.6±3.0	34.8±3.2
Tail pathology	42.7±4.4	42.5±4.0

[a]Mean ± standard deviation. [b]No significant differences were observed.

Table SII. Motility of spermatozoa from fertile men before and after low-intensity millimeter-wavelength electromagnetic wave exposure.[b]

Spermatozoa motility characteristics	Spermatozoa percentage, %[a]	
	Control	Exp1
Progressively motile	61.7±6.8	61.9±7.1
Non-progressively motile	15.3±2.2	15.3±2.4
Immotile	22.9±2.8	22.8±3.2

[a]Mean ± standard deviation. [b]No significant differences were observed.

Table SIII. Resistance of spermatozoa from fertile men to acetic acid after exposure to low-intensity millimeter-wavelength electromagnetic wave exposure.[c]

	Motile spermatozoa, %		
Incubation	Control	Exp1	Exp2
0	58.0±4.8	58.1±4.4	58.0±4.6
10	42.0±3.5	47.5±4.2	45.4±4.5
20	23.6±3.1	29.7±1.8[a]	28.0±1.1[a]
30	7.4±1.1	13.1±1.4[a]	11.4±1.2[a]
40	0	4.3±0.9[b]	2.3±0.9[b]
50	0	0	0

[a]P<0,05, [b]P<0,01 vs. control. [c]No significant differences were observed.