

## Supplementary online only material

Table S1

Parameter	Lower Reference Range	Description
<b>Volume</b>	≥ 1.5 mL	The lower reference limit for semen volume; low volume may indicate pathological conditions or collection problems.
<b>Color</b>	Whitish to gray	Normal color of semen; red-brown appearance may indicate blood presence; yellow color may indicate jaundice or medication side effects.
<b>Liquefaction</b>	15–30 min	Time taken for semen to liquefy; necessary for sperm movement; delay can affect fertility.
<b>Viscosity</b>	Normal	Normal semen viscosity shows small discrete drops; high viscosity can affect sperm motility and concentration.

Table S2

Parameter	Lower Reference Range
Total Motility	42%
Progressive Motility (PR)	30%
Total Motile Sperm Count	39 million
Normal Sperm Morphology	4%
Sperm Count	15 million/mL