Portable tool for analyzing male fertility based on the measurement of sperm concentration and motility

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We have designed a low-cost portable device to carry out essential measurements of semen quality, such as concentration and motility of spermatozoa, outside laboratory conditions. The technology developed guarantees a standardized, reliable, and rapid analysis that meets the medical and veterinary quality.

To ensure minimum cost and maximum accessibility of the device, we have only include the necessary optical, mechanical, and electronic parts. Preprocessing and analysis of the images is carried out on a companion mobile application.

We offer the following characteristics: (i) Compatibility with different microscopy disposable counting chamber slides. (ii) Integration of an easy-to-use mechanical system to focus on cells. (iii) LED-based illumination, which allows sufficient contrast for cell detection. (iv) User-friendly interface to guide the acquisition and analysis processes. (v) Integration of image processing techniques tailored to the quality of the acquired images. (vi) Accurate analysis of relevant parameters for concentration and motility based on the processed images.

The proposed solution differs from similar existing devices on the market by offering to analyze not only the concentration but also the motility of spermatozoa. We have tested with success its use for veterinary diagnostic such as pig and fish.