



**20TH WORLD CONGRESS
ON IN VITRO FERTILIZATION**



The effect of Water-, Oil-, and silicone- based personal lubricants on sperm motility and kinematics

Fereshteh Dardmeh ^{1,*}, Nikolaj Larsen ¹, Ida Dsane Andersen ¹, Jonas Frederiksen ¹, Peter Krupsdahl Andreasen Elling ¹, Hiva Alipour ¹

1. Department of Health Science and Technology, Aalborg University, Aalborg, Denmark.

*Contact: Fed@hst.aau.dk

Introduction

Many couples worldwide use personal lubricants during intercourse to prevent dyspareunia, dryness and to enhance the sensation.

Despite many commercially available lubricants being marketed as "sperm friendly", several studies have reported adverse effects of lubricants on sperm quality. Couples trying to conceive are likely to continue their normal routines which may involve the use of different kinds of lubricants.

Even though some couples might achieve pregnancy while using personal lubricants, it could still be a negative factor prolonging the prospect of conceiving or even result in experiencing infertility.

The most common commercially available over-the-counter personal lubricants are silicone-based (e.g. Klick Natural Glide; RFSU, Norway), water-based (e.g. Klick Supreme Glide; RFSU, Norway) or oil-based (e.g. YES Oliebaseret Glidecreme Ø; YES, Denmark).

Despite the accessibility and frequent use, the possible effects of lubricants with different bases on sperm quality has not been thoroughly and comparatively investigated.

Study design

This blinded crossover quality control study assessed the effect of three commercially available silicone-based (Klick Natural Glide; RFSU, Norway), water-based (Klick Supreme Glide; RFSU, Norway) and oil-based (YES Oliebaseret Glidecreme Ø; YES, Denmark) lubricants, on sperm motility and detailed kinematic parameters as biomarkers of male fertility at the time points 0, 1 and 2 hours after in sperm collected from 18 normozoospermic volunteers.

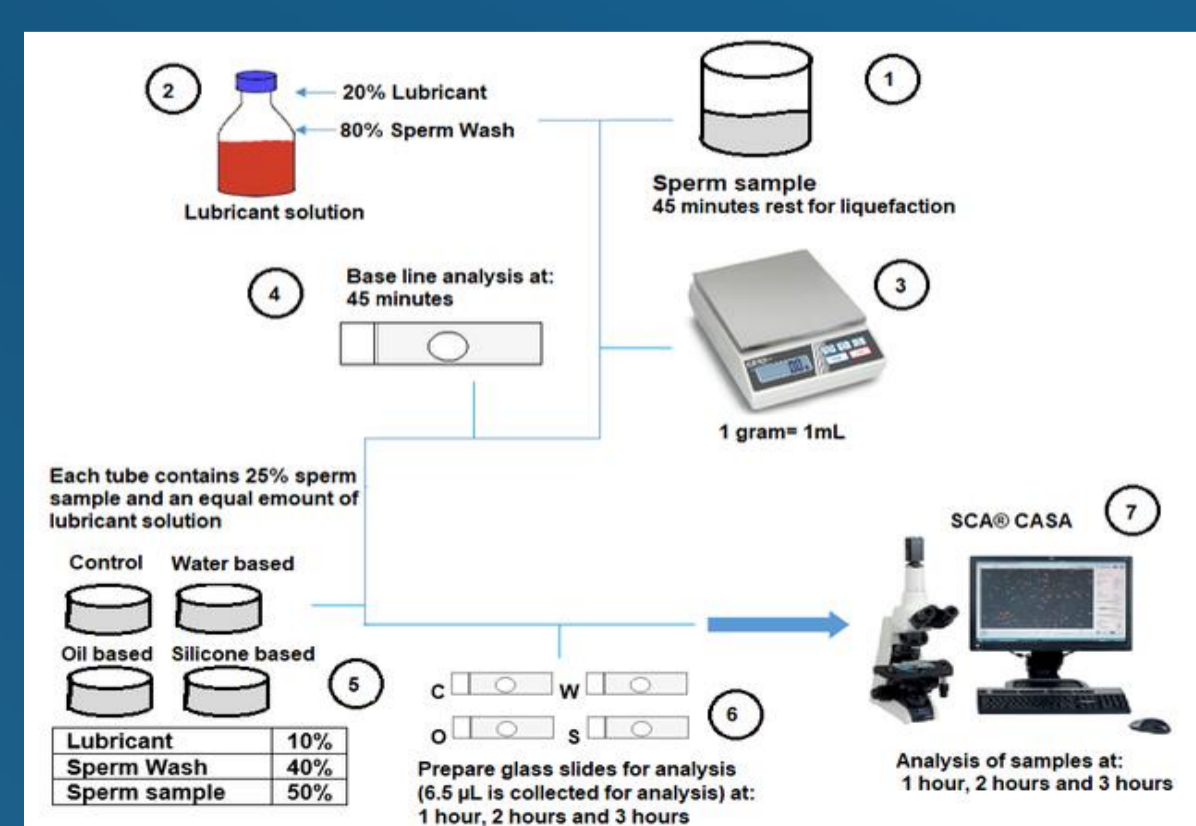


Fig. 1: Flowchart demonstrating the study design work flow.

Materials and Methods

Each sperm sample was divided equally between four test tubes containing 20% of the mentioned lubricants diluted in Nidacon PureSperm® Wash, and Nidacon PureSperm® Wash alone (as control). Motility parameters (Fig. 2) were determined using the sperm class analyzer (SCA®, ver 6.3, Microptic, Barcelona, Spain) computer aided semen analysis system at three time points over a period of 2 hours.

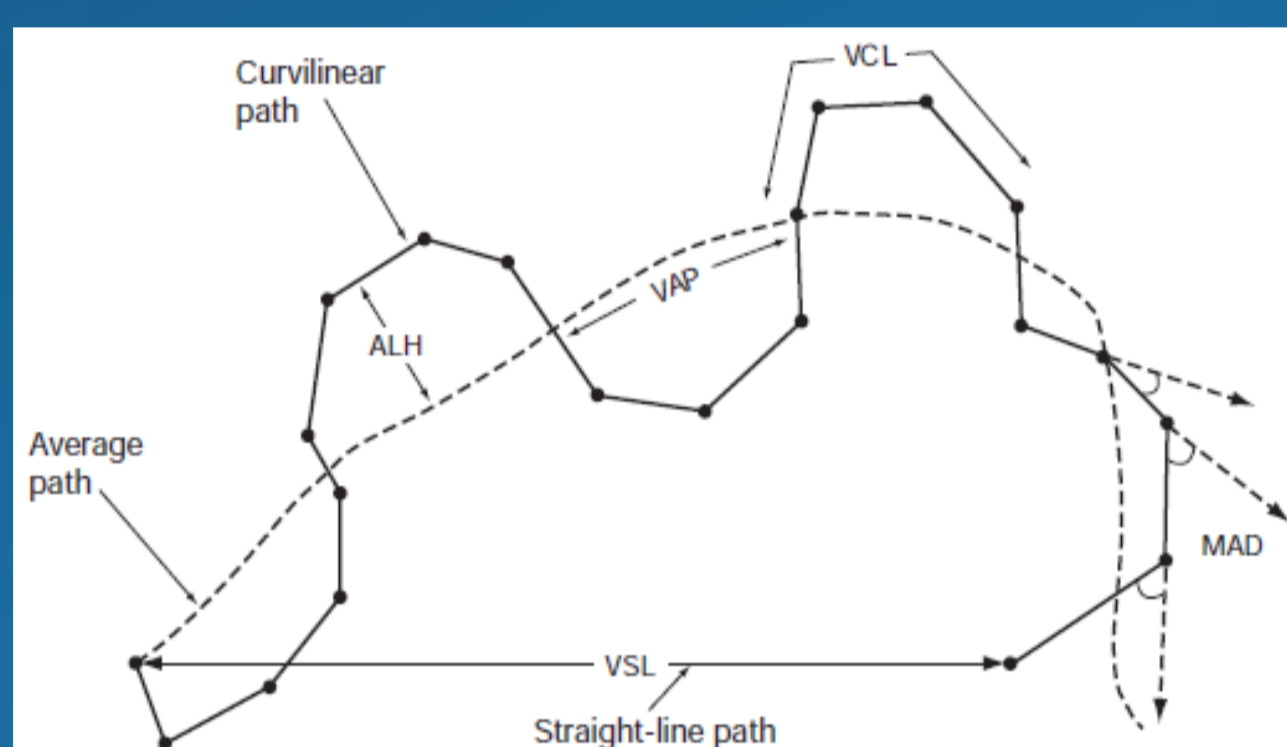
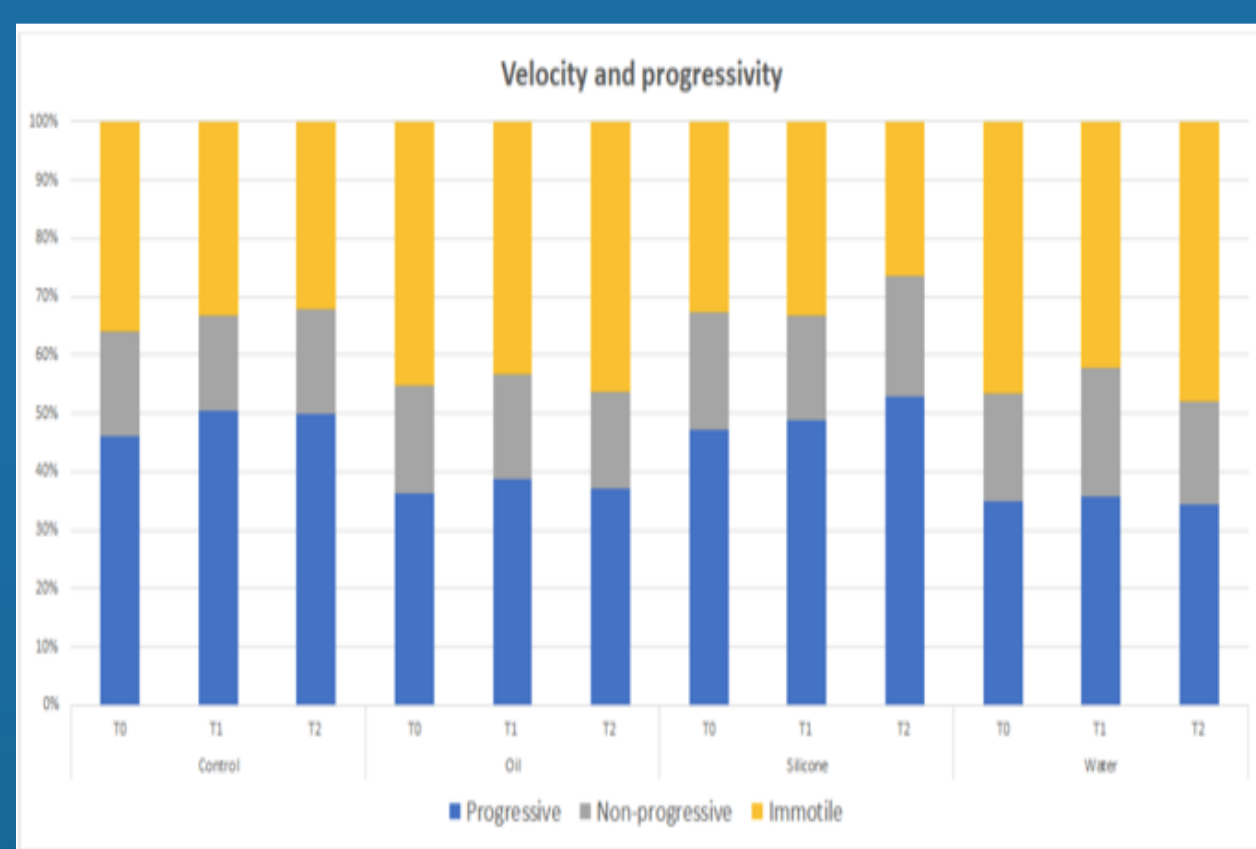


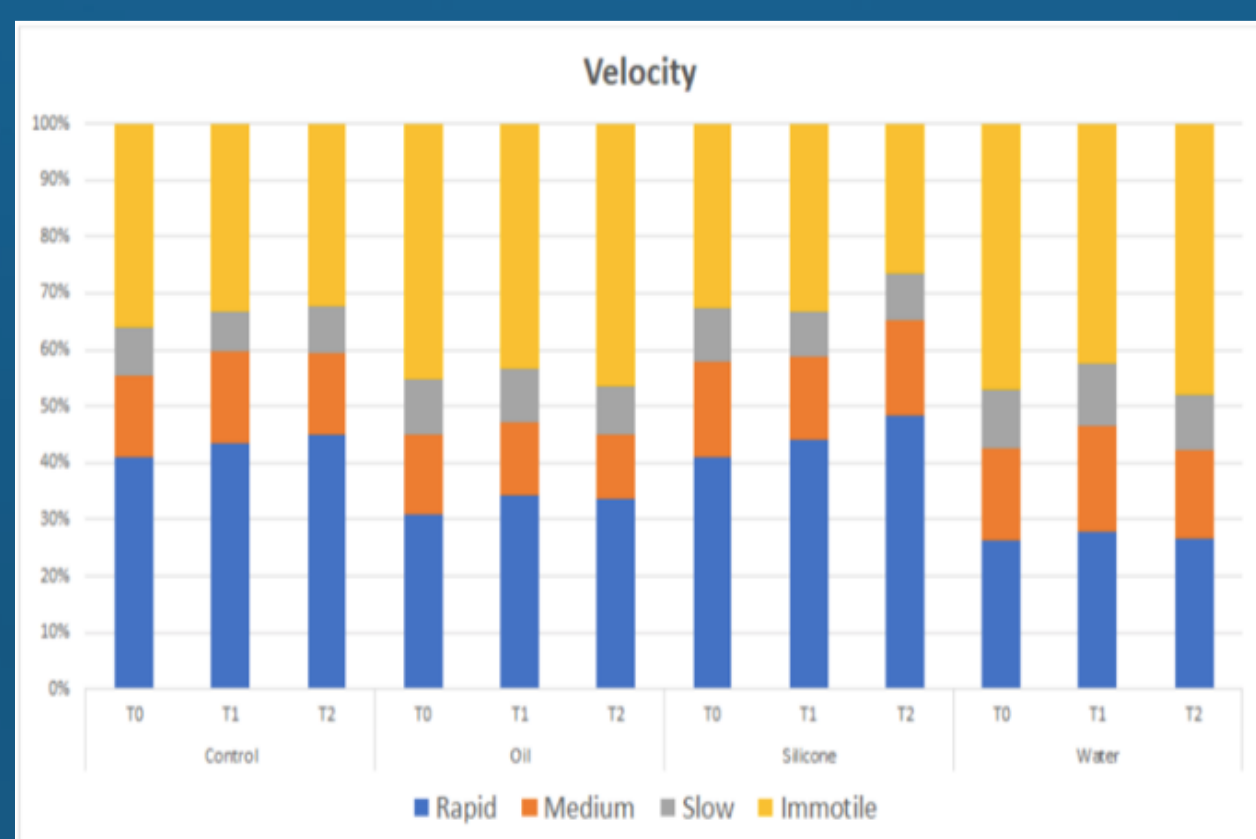
Fig 2. Motion and velocity parameters as defined by the 5th edition of the WHO laboratory manual for the Examination and processing of human semen, and assessed by the SCA®.

Results

The results demonstrated, that the water-based lubricant, resulted in a significantly lower percentage of progressively motile, and a significantly higher percentage of immotile spermatozoa compared to the silicone-based lubricant. The percentage of total motile sperm was lower in the water- and oil-based groups than in the silicone-based group at different times.



The velocity of the spermatozoa also showed a decline when exposed to the water-based, and oil-based lubricant compared with the control and silicone group.



Discussion

The water-based lubricant contains glycerine, which may dissolve the flagellum of the spermatozoa. Studies investigating sperm quality by assessing DNA fragmentation also found that water-based lubricant had negative effects on chromatin integrity and sperm motility.

The oil-based lubricant used in this study contains oils from vegetables and other organic products. There is controversy regarding many components of modern lubricants including natural and organic ingredients, and it may be necessary to study the effect of the individual components' effect on sperm function.

The silicone-based lubricant, however, does not interfere much with the motility. This might be explained by the few contents (dimethicone and cyclopentasiloxane) in the silicone-based lubricant. Dimethicone is a non-spermicide agent that does not interfere with or affects the spermatozoa.

Conclusion

This study demonstrated that water- and oil-based personal lubricants can negatively affect sperm motility.

The silicone-based lubricant did not demonstrate any adverse effects and may be suggested as the safest type of lubricant, especially for couples trying to conceive.

Further investigation of the underlying mechanisms of the negative effect of water and oil-based lubricants on male fertility potential are required to provide a more solid conclusion.

References

- Alipour, H., Van Der Horst, G., Christiansen, O., Dardmeh, F., Jørgensen, N., Nielsen, H. and Hnida, C. (2017). Improved sperm kinematics in semen samples collected after 2 h versus 4-7 days of ejaculation abstinence. *Human Reproduction*, 32(7), pp.1364-1372.
- Ashok Agarwal, Fnu Deepinder, Marcello Cocuzza, Robert A. Short, Donald P. Evenson (2008). Effect of vaginal lubricants on sperm motility and chromatin integrity: a prospective comparative study, *Fertility and Sterility*, Volume 89, Issue 2, PP375-379.

Acknowledgements

The authors would like to express their sincere gratitude to Microptic S.L. (Barcelona, Spain) for their technical support during this study.

Scan to
download
poster

