



**The Effects of Vaginal Lubricants and Moisturizers on  
Computer Assisted Sperm Analysis (CASA) Parameters  
Associated with Cervical Mucus Penetration**

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**Objective**

The incidence of vaginal dryness is increased in trying-to-conceive (TTC) couples; however, numerous papers have cited the detrimental effect of common vaginal lubricants and moisturizers on sperm motility. To date, studies have not been done using CASA to evaluate the effects of lubricant products on the motion characteristics of sperm thought to be associated with cervical mucus transport.

Specifically, samples of sperm with mean average path velocity (VAP), % straightness (STR) and Amplitude of Lateral Head Displacement (ALH) exceeding a predetermined level have recently been proposed to have a superior likelihood of good cervical mucus penetration in vivo. Numerous studies have found a correlation between such ability of sperm to penetrate cervical mucus and pregnancy outcomes.

The current study evaluated sperm motion parameters following contact with several vaginal lubricants/moisturizers, to determine their impact on CASA outcomes associated with good cervical mucus penetration, as well as overall motility.

**Design**

Prospective, comparative, in-vitro study.

**Materials and Methods**

Raw semen from 25 normospermic donors was diluted 1:1 with Human Tubal Fluid. Each sample was then divided into one ml aliquots and placed into multiple culture wells.

Vaginal lubricants/moisturizers as shown in the Table below were applied across these wells to achieve a final 10% v/v concentration, and incubated at 37°C for 30 min. CASA of sperm from these treatments and those in a control well (with no lubricant) was then performed.



Samples in each treatment fulfilling all of the following parameters were given a positive penetration score (e.g. likely to penetrate cervical mucus well): VAP > 25 micron/sec; STR >80%; and ALH >2.5 microns. Positive penetration scores were reported as a percent of all samples tested and compared between the treatments.

Additionally, mean outcomes in each treatment were determined and compared for the individual CASA parameters, as well as for the overall percentage of motile sperm.

### Results

The mean motion characteristics for these specific CASA criteria (+/- SEM) and percent samples with a positive penetration score are shown in the Table below. Means with differing superscripts differ from the control at p<0.05.

<b>Sperm Motility Following Contact with Vaginal Lubricants</b>					
Treatment	VAP	STR%	ALH	Overall % Motile	%Samples w/ +Score
Control Media	56 +/-3	81 +/-2	3.9 +/-0.3	70 +/-4	61b
FemGlide	50 +/-2	81 +/-4	3.7 +/-0.4	61 +/-3	68b
Pre~Seed	53 +/-3	85 +/-3	3.6 +/-0.2	76 +/-3	90a
KY Jelly	49 +/-4	80+/-4	2.4 +/-0.6a	29a +/-2	20c
Astroglide	39a +/-2	74+/-3	2.6+/-0.5a	5a +/-0.4	10c
Replens	*	*	*	15a +/-2	*

Replens caused the media to abruptly turn very acidic and opaque. Further, sperm clumping occurred to the point that meaningful CASA data could not be generated.



### **Conclusion**

Within 30 minutes of exposure, a 10% v/v concentration of the most commonly used lubricant products significantly decreased sperm motility and penetration scores.

The percentage of samples with a positive penetration score was significantly improved with Pre~Seed as compared to the other treatments. Products used to alleviate vaginal dryness that negatively affect sperm motility and transport should be avoided by trying to conceive couples.

Studies to determine the in vivo impact of vaginal lubricants/moisturizers on cervical mucus penetration are ongoing.