

Supplementary Tables

Table 1: Baseline characteristics of sperm specimens (all done immediately post-liquefaction with the exception of the sperm counts (Concentrations) which were performed on receipt of the specimens).

Variable	n	Mean	SD	Median	Q1	Q3	Min	Max
Specimen volume (ml)	60	3.557	1.641	3	2.5	4.5	1.5	8
Concentration x10 ⁶ /ml	60	58.417	30.531	49.000	34.000	79.500	15	135
% immotile	60	41.183	9.105	41.000	34.000	48.750	26	67
% non-progression	60	6.917	2.999	6.000	5.000	9.000	2	13
% progression	60	51.900	10.054	54.000	43.250	60.000	24	69
Forward progression score*	60			2+			2	3

* There were 17 scores of 2; 41 scores of 2+; and 2 scores of 3.

Forward progression (FP) was scored as described in the methods

Tables 2-7: Summaries of the characteristics following exposure to each treatment at various time points: 2-4 hours; 24 hours; 48 hours; and 72 hours after liquefaction.

Table 2: The characteristics of the control (untreated) sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	44.500(42.0)	70.050 (68.5)	92.350 (100.0)	99.967 (100.0)
% non-progression	11.600 (10.0)	19.933 (18.5)	5.317 (0.0)	0.033 (0.0)
% progression	43.183 (45.5)	10.017 (4.0)	2.333 (0.0)	0.000 (0.0)
FP score*	(2+)	(1)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details).

Table 3: The characteristics of the egg white treated sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	38.833 (37.0)	65.467 (68.5)	87.450 (99.0)	96.200 (100.0)
% non-progression	16.900 (14.0)	24.767 (24.5)	9.833 (1.0)	3.183 (0.0)
% progression	44.267 (46.0)	9.767 (6.0)	2.683 (0.0)	0.617 (0.0)
FP score*	(2)	(1+)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details).

Table 4: The characteristics of the olive oil treated sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	87.183 (90.0)	99.833 (100.0)	100.000 (100.0)	100.000 (100.0)
% non-progression	10.067 (9.0)	0.133 (0.0)	0.000 (0.0)	0.000 (0.0)
% progression	2.417 (0.0)	0.033 (0.0)	0.000 (0.0)	0.000 (0.0)
FP score*	(1)	(0)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details).

Table 5: The characteristics of the Optilube® treated sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	94.533 (100.0)	99.517 (100.0)	100.000 (100.0)	100.000 (100.0)
% non-progression	4.867 (0.0)	4.833 (0.0)	0.000 (0.0)	0.000 (0.0)
% progression	0.600 (0.0)	0.000 (0.0)	0.000 (0.0)	0.000 (0.0)
FP score*	(0)	(0)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details).

Table 6: The characteristics of the Pre-Seed® treated sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	87.533 (90.0)	97.883 (100.0)	99.933 (100.0)	100.000 (100.0)
% non-progression	10.500 (10.0)	2.117 (0.0)	0.067 (0.0)	0.000 (0.0)
% progression	1.967 (0.0)	0.000 (0.0)	0.000 (0.0)	0.000 (0.0)
FP score*	(1)	(0)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details).

Table 7: The characteristics of the Yes Baby® treated sperm specimens at increasing times after liquefaction (n = 60 for all calculations)

	Mean (Median)			
	2 to 4 hours	24 hours	48 hours	72 hours
% immotile	99.167 (100.0)	100.000 (100.0)	100.000 (100.0)	100.000 (100.0)
% non-progression	0.667 (0.00)	0.000 (0.0)	0.000 (0.0)	0.000 (0.0)
% progression	0.167 (0.0)	0.000 (0.0)	0.000 (0.0)	0.000 (0.0)
FP score*	(0)	(0)	(0)	(0)

FP score = forward progression score;

*Means are not meaningful for this ordinal variable where code 1 = score 0; code 2 = score 1; code 3 = score 1+; code 4 = score 2; code 5 = score 2+; code 6 = score 3 (see methods section for the scoring details)

Tables 8-11: Hypothesis test results

Table 8: Wilcoxon signed rank test results for time 2-4 hours comparisons of % immotility and Forward progression scores: lubricants vs. controls (no lubricant) and pairwise comparisons between the three commercial lubricants tested*

Comparison groups	% Immotility		Forward progression score	
	Diff.	p**	Diff.	p**
Control vs. Egg white	Egg white > Control	0.001	No difference found	0.124
Control vs. Olive oil	Control > Olive oil	<0.001	Control > Olive oil	<0.001
Control vs. Optilube®	Control > Optilube®	<0.001	Control > Optilube®	<0.001
Control vs. Pre-Seed®	Control > Pre-Seed®	<0.001	Control > Pre-Seed®	<0.001
Control vs. Yes Baby®	Control > Yes Baby®	<0.001	Control > Yes Baby®	<0.001
Optilube® vs. Pre-Seed®	Pre-Seed® > Optilube®	<0.001	Pre-Seed® > Optilube®	<0.001
Optilube® vs. Yes Baby®	Optilube® > Yes Baby®	<0.001	Optilube® > Yes Baby®	<0.001
Pre-Seed® vs. Yes Baby®	Pre-Seed® > Yes Baby®	<0.001	Pre-Seed® > Yes Baby®	<0.001

Diff. = the difference between the groups.

*For a rejection p-value of 0.05, due to multiple comparisons, the Bonferroni-adjusted critical p-value = $0.05/8 = 0.00625$ (since 8 pairwise comparisons were made for each set of tests).

**p = unadjusted p-value for Wilcoxon's signed rank tests.

Table 9: Wilcoxon signed rank test results for time 24 hours comparisons of % immotility and Forward progression scores: lubricants vs. controls (no lubricant) and pairwise comparisons between the three commercial lubricants tested*

Comparison groups	% Immotility		Forward progression score	
	Diff.	p**	Diff.	p**
Control vs. Egg white	No difference found	0.246	No difference found	0.235
Control vs. Olive oil	Control > Olive oil	<0.001	Control > Olive oil	<0.001
Control vs. Optilube®	Control > Optilube®	<0.001	Control > Optilube®	<0.001
Control vs. Pre-Seed®	Control > Pre-Seed®	<0.001	Control > Pre-Seed®	<0.001
Control vs. Yes Baby®	Control > Yes Baby®	<0.001	Control > Yes Baby®	<0.001
Optilube® vs. Pre-Seed®	No difference found	0.005	Optilube® > Pre-Seed®	<0.001
Optilube® vs. Yes Baby®	No difference found	0.083	No difference found	0.157
Pre-Seed® vs. Yes Baby®	Pre-Seed® > Yes Baby®	<0.001	Pre-Seed® > Yes Baby®	<0.001

Diff. = the difference between the groups.

*For a rejection p-value of 0.05, due to multiple comparisons, the Bonferroni-adjusted critical p-value = $0.05/8 = 0.00625$ (since 8 pairwise comparisons were made for each set of tests). **p = unadjusted p-value for Wilcoxon's signed rank tests.

Table 10: Wilcoxon signed rank test results for time 48 hours comparisons of % immotility and Forward progression scores: lubricants vs. controls (no lubricant) and pairwise comparisons between the three commercial lubricants tested*

Comparison groups	% Immotility		Forward progression score	
	Diff.	p**	Diff.	p**
Control vs. Egg white	No difference found	0.061	No difference found	0.129
Control vs. Olive oil	Control > Olive oil	<0.001	Control > Olive oil	<0.001
Control vs. Optilube®	Control > Optilube®	<0.001	Control > Optilube®	<0.001
Control vs. Pre-Seed®	Control > Pre-Seed®	<0.001	Control > Pre-Seed®	<0.001
Control vs. Yes Baby®	Control > Yes Baby®	<0.001	Control > Yes Baby®	<0.001
Optilube® vs. Pre-Seed®	No difference found	0.317	Optilube® > Pre-Seed®	0.317
Optilube® vs. Yes Baby®	No difference found	NR***	No difference found	NR***
Pre-Seed® vs. Yes Baby®	No difference found	0.317	Pre-Seed® > Yes Baby®	0.317

Diff. = the difference between the groups.

*For a rejection p-value of 0.05, due to multiple comparisons, the Bonferroni-adjusted critical p-value = $0.05/8 = 0.00625$ (since 8 pairwise comparisons were made for each set of tests). **p = unadjusted p-value for Wilcoxon's signed rank tests.

***NR = no result as all values were identical (100% immotility or zero forward progression in all specimens)

Table 11: Wilcoxon signed rank test results for time 72 hours comparisons of % immotility and Forward progression scores: lubricants vs. controls (no lubricant) and pairwise comparisons between the three commercial lubricants tested*

Comparison groups	% Immotility		Forward progression score	
	Diff.	p**	Diff.	p**
Control vs. Egg white	Control > Egg white	0.005	No difference found	NR***
Control vs. Olive oil	No difference found	0.317	Control > Olive oil	<0.001
Control vs. Optilube®	No difference found	0.317	Control > Optilube®	<0.001
Control vs. Pre-Seed®	No difference found	0.317	Control > Pre-Seed®	<0.001
Control vs. Yes Baby®	No difference found	0.317	Control > Yes Baby®	<0.001
Optilube® vs. Pre-Seed®	No difference found	NR***	Optilube® > Pre-Seed®	NR***
Optilube® vs. Yes Baby®	No difference found	NR***	No difference found	NR***
Pre-Seed® vs. Yes Baby®	No difference found	NR***	Pre-Seed® > Yes Baby®	NR***

Diff. = the difference between the groups.

*For a rejection p-value of 0.05, due to multiple comparisons, the Bonferroni-adjusted critical p-value = $0.05/8 = 0.00625$ (since 8 pairwise comparisons were made for each set of tests).

**p = unadjusted p-value for Wilcoxon's signed rank tests.

***NR = no result as all values were identical (100% immotility or zero forward progression in all specimens)

Supplementary videos

Available at:

<https://www.dropbox.com/sh/wxcwczowwljcsd7/AADEpLcYfd4oEsm5gMipxBnta?dl=0>