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Human sperm motility stimulant S-ACT-1 isolated from Sri Lankan red alga *Gelidiella acerosa* has no DNA damaging effect *in vitro*.

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S-ACT-1 is a sulfonoglycolipid isolated from *Gelidiella acerosa* (Forsskal) which has shown promising human sperm motility stimulating activity *in vitro*. In order to use such a compound in Assisted Reproduction (AR), it should be devoid of any deleterious effects to the integrity of sperm DNA.Therefore the aim of this study is to evaluate the effect of S-ACT-1 on integrity of DNA in human spermatozoa. Fresh specimens of *Gelidiella acerosa* were extracted into 1:1 CH_2Cl_2/ MeOH solvent mixture and S-ACT-1 was separated from the Hexane soluble fraction and purified through recrystallization followed by reverse phase HPLC. 15 semen samples from healthy volunteers and 15 samples from infertile subjects were used in the study.Semen samples washed with medium BWW were mixed with S-ACT-1 in normal saline (0.9% NaCl w/v) to obtain the final concentrations of 50, 100, 250 and 500 μg/mL and incubated for 1h, 3h & 24h and stained with acridine orange. The % number of red florescent (DNA damaged) spermatozoa were counted under florescence microscopy to evaluate the DNA damage. Normal saline served as the control. None of the treatment groups had significant ($p>0.05$) DNA damage compared to control at any time intervals investigated (Table 1).

Table 1: Effect of S-ACT-1 on DNA integrity (in terms of % red florescence (mean±SEM) of human sperms collected from normal and infertile subjects *in vitro*.

Incubation period	1h					3h					24h				
S-ACT-1 (μg / mL)	0	50	100	250	500	0	50	100	250	500	0	50	100	250	500
Sperm from normal subjects	1.27 ± 0.40	0.63 ± 0.20	0.5 ± 0.26	0.6 ± 0.24	0.3 ± 0.11	1.18 ± 0.27	0.9 ± 0.24	0.53 ± 0.2	1.27 ± 0.37	0.83 ± 0.27	1.1 ± 0.36	1.3 ± 0.3	1.03 ± 0.45	1.3 ± 0.31	1.3 ± 0.36
Sperm from abnormal subjects	1.07 ± 0.31	0.9 ± 0.16	0.77 ± 0.31	1.33 ± 0.41	1.1 ± 0.30	1.6 ± 0.44	0.7 ± 0.26	1.07 ± 0.42	1.03 ± 0.25	1.7 ± 0.33	1.57 ± 0.37	1.27 ± 0.33	0.6 ± 0.29	1.18 ± 0.28	1.0 ± 0.3

It is concluded that human sperm motility stimulant S-ACT-1 of the Sri Lankan marine red alga *Gelidiella acerosa* has no deleterious effect on the integrity of the sperm DNA and may be a potential compound to be used in AR as a sperm stimulant.

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