INFLUENCE OF VARYING CONCENTRATIONS OF PENTOXIFYLLINE, CAFFEINE AND 2-DEOXYADENOSINE ON MOTION CHARACTERISTICS OF CRYOPRESERVED HUMAN SPERMATOZOA. R.K. Sharma, M.V. Tolentino*, A.J. Thomas Jr. and A. Agarwal, Andrology Laboratory, Department of Urology, The Cleveland Clinic Foundation, Cleveland, OH 44195.

The success of assisted reproductive technology program using cryopreserved sperm from anonymous donors is limited because of poor recovery of motile sperm from post-thaw samples. Fertilization of human oocyte by capacitated spermatozoa takes a minimum of 1 h. Therefore, for any pharmacological stimulation to be of clinical value, its effect on enhanced motility and other motion characteristics should be maintained for a minimum of 1 h period. With this objective, three motility stimulants: pentoxifylline (PTX), caffeine (CAF) and 2-deoxyadenosine (2-DA) were incubated with post-thaw semen samples from healthy donors (n=11) for different periods of incubation (60, 120 and 180 minutes). The concentrations used were 5, 10 and 20 mM for PTX; 2, 5 and 10 mM for CAF; and 1, 2, and 5 mM for 2-DA respectively. Percent motility and changes in motion characteristics i.e., curvilinear velocity (VCL), straight line velocity (VSL), average path velocity (VAP), linearity (LIN) and amplitude of lateral head displacement (ALH) were measured on a computer-assisted semen analyzer. Compared with control, 2, 5 and 10 mM concentrations of PTX and CAF; and 2 and 5 mM concentration of 2-DA induced significant changes in motility (p<.004, .0001 and <.001). Other motion characteristics were not significantly affected by PTX. CAF stimulated VCL (p<.014); VAP (p<.007) and ALH (p<.018). Changes in ALH and LIN were however not significant. Treatment with 2-DA resulted in a significant increase in motility (p<0.001), VCL (p<.001), VSL (p<.003), VAP (p<.003) LIN (p<.04) and ALH (p<.001). PTX, CAF and 2-DA at concentrations of 5, 10 and 5 mM respectively were found to elicit the optimum response. The retention of stimulatory effect of PTX was minimum (1 h), CAF (>1 h), compared to the effect of 2-DA (3 h). Our study suggests that these stimulants when used at their optimum concentration can retain the improved sperm quality for durations longer than the minimum time needed for fertilization. This may be of significance in improving the poor semen quality observed in oligozoospermic samples as well as in semen specimens from cancer patients.