EFFECT OF MOTILITY STIMULANTS ON 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.

A 25% to 75% reduction in sperm motility occurs following freezing and thawing of sperm. This study evaluated the effect of three motility stimulants: pentoxifylline (PTX), caffeine (CAF) and 2-deoxyadenosine (2-DA) on functional and sperm motion characteristics using thawed donor sperm (n=11). Semen samples were incubated with PTX (5mM), CAF (5mM) and 2-DA (mM) dissolved (1:1) in modified human tubal fluid for one hour at 37°C. Percent viability was assessed by eosin-nigrosin dye exclusion test, integrity of sperm membrane by hypoosmotic swelling (HOS) test, and penetration of mucus by bovine cervical - mucus penetration (BCMP) assay. 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. Sperm viability, membrane integrity and cervical mucus penetration did not improve following stimulation. However, compared with controls, PTX, CAF and 2-DA stimulants induced significant changes in motility (p< .0001, .0005 and <.001), VCL (p< .0002, <.0001 and <.0001), VSL (p< .004, <.009 and < .0001), VAP (p< .0007, < .0001 and <.0001) and ALH (p< .0002, < .0001 and <.0002) respectively. No change in linearity was seen. All the three stimulants were equally effective in increasing sperm motion characteristics.

In conclusion, improvement in sperm motion characteristics of cryopreserved sperm can be achieved over extended periods with the use of these motility stimulants. This in turn may enhance the fertilizing capacity of frozen spermatozoa from anonymous donors or from cancer patients in assisted reproductive procedures.