TREATMENT OF HUMAN SPERMATOZOA WITH PENTOXIFYLLINE BEFORE FREEZING IMPROVES THE POST-THAW ACROSOME REACTION RATE. Sandro C. Esteves, Rakesh K. Sharma, Anthony J. Thomas Jr. and Ashok Agarwal, Cleveland, OH (Presented by Dr. Esteves).

INTRODUCTION AND OBJECTIVES: The fertilizing ability of human spermatozoa may be significantly impaired after cryopreservation. The use of pentoxifylline in assisted-reproduction improves sperm motility, motion characteristics and acrosome reaction (AR). Improvement in AR rate is known to improve the fertilizing ability of spermatozoa. The purpose of this study was to determine if the direct addition of pentoxifylline to the semen specimen before cryopreservation can increase the rate of AR in thawed spermatozoa.

METHODS: Semen specimens from 15 proven fertile donors were divided into two aliquots. One was treated by direct addition of pentoxifylline (5 mM) to the seminal plasma and the other received no treatment. Both aliquots were then cryopreserved by the liquid nitrogen vapor method. Percent motility and motion characteristics were evaluated by computer-aided semen analysis. Spontaneous and calcium ionophore-induced AR was examined by fluorescein iso-thiocyanate conjugated peanut lectin (FITC-PNA) combined with a supra-vital dye Hoechst-33258.

RESULTS: Pentoxifylline treatment increased sperm motility, amplitude of lateral head displacement, and frequency of spontaneous AR before freezing (P <0.05). After thawing, there were no differences in sperm motility, motion characteristics, spontaneous AR frequency and viability between treated and untreated specimens. However, the percentage of spermatozoa that underwent induced AR was significantly higher in the treated group (P <0.004).

CONCLUSIONS: Pentoxifylline treatment before freezing enhances the induced-acrosome reaction in post-thaw spermatozoa. This treatment is especially relevant in cancer patients who generally have a poor quality of semen before cryopreservation. The above method may allow improved fertilization rates with assisted reproductive procedures such as IUI or IVF.