# Effect of vapor phase cryopreservation on acrosome of spermatozoa in fertile and subfertile men

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## Abstract

**Introduction:** Acrosome is a cap-like structure which contains several hydrolytic enzymes necessary for acrosome reaction. Generally, acrosome reaction would be important if it occured on the zona pellueida, other wise; the spermatozoa could not penetrate through this layer. On the other hand, freezing- thawing process can damage acrosome membrane and reduce the sperm fertilizing potential. There is little information about the effects of vapor phase cryopreservation on acrosome. The aim of the persent study is to evaluate the effect of vapor phase cryopreservation on acrosome of spermatozoa of subfertile and fertile men.

**Materials and Methods:** In this study, semen samples were collected from subfertile (n=20) and fertile men (n=10) after 48 h abstinence of intercourse. After semen analysis by Semen Analyzer Quality according to WHO criteria, each semen sample was divided into two portions (100 $\mu l$ each). The first portion was stained with triple staining to show the quality of acrosome and the second portion was stained after vapor phase cryopreservation and thawing. Results were analyzed by paired t-test.

**Results:** Before vapor phase cryopreservation, mean percentage of live spermatozoa with intact acrosome in subfertile men and fertile men were 26±3.64 and 33.37±4.07, respectively, but it decreased following vapor phase cryopreservation-thawing to 11.6±1.82 in subfertile and 9.87±2.97 in fertile men.

**Conclusion:** It is concluded that vapor phase cryopreservation, impairs acrosome structure and causes destruction of acrosome and extrudes acrosomal enzymes in absence of oocyte. Therefore cause reduction of fertility of spermatozoa in fertile and subfertile men.

**Key Words:** Acrosome, Vapor phase cryopreservation, Sperm, Fertility, Infertility, and ART.

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