RINGKASAN

Salah satu teknik preservasi sperma adalah teknik pengeringan. Teknik ini terbukti sangat bermanfaat dan telah digunakan secara luas untuk produk biologis, klinis, pengawetan makanan, farmasi dan pertanian. Metode pengeringan memiliki kelebihan karena biaya yang relatif murah, mudah dan praktis. Spermatozoa mamalia terbukti dapat disimpan dalam kondisi kering tanpa kehilangan potensi untuk membuahi dan menghasilkan embrio normal.

Pada penelitian ini digunakan teknik *freeze-drying* dengan membekukan sperma pada suhu -20°C kemudian mengeringkannya dengan aparatus *freeze-dryer.* Selanjutnya dilakukan penilaian iintegritas DNA spermatozoa pada tiga kelompok perlakuan, yaitu sperma segar, sperma yang diberi perlakuan *freeze-drying* dan sperma yang diberi perlakuan *freeze-drying*+penyimpanan pada 4°C selam 7 hari, dengan metode *Comet Assay* dan dihitung variabel Persentase Komet, Skor Visual dan Persentase DNA Ekor komet.

Pada penelitian ini digunakan rancangan penelitian *The Posttest Only Control Group Design* dan uji statistika inferensial Manova. Ada perbedaan yang bermakna Persentase Komet antara kelompok sperma segar dengan kelompok *freeze-drying* ; ada perbedaan sangat bermakna Persentase Komet antara kelompok segar dengan *freeze-drying*+penyimpanan ; ada perbedaan sangat bermakna Persentase Komet antara kelompok *freeze-drying* dengan kelompok *freeze-drying*+penyimpanan. Selanjutnya tidak ada perbedaan bermakna Visual Skor antara kelompok segar dengan *freeze-drying* ; ada perbedaan sangat bermakna Visual Skor antara kelompok segar dengan kelompok *freeze-drying*+penyimpanan ; ada perbedaan sangat bermakna Visual Skor antara kelompok *freeze-drying* dengan kelompok *freeze-drying*+penyimpanan. Tidak ada perbedaan bermakna Persentase DNA Ekor Komet antara kelompok segar dengan *freeze-drying* ; ada perbedaan sangat bermakna Persentase DNA Ekor Komet antara kelompok segar dengan kelompok *freeze-drying*+penyimpanan ; ada perbedaan sangat bermakna Persentase DNA Ekor Komet Persentase DNA Ekor Komet.

Dapat disimpulkan bahwa teknik *freeze-drying* tidak mempengaruhi integritas DNA spermatozoa, namun penyimpanan

dapat mempengaruhinya. Teknik *freeze-drying* dapat diaplikasikan untuk preservasi sperma dengan memperhatikan kondisi penyimpanan yang harus kedap udara.

SUMMARY

Drying is one of the sperm preservation technique. This technique has advantages and had been used widely in biological products, clinics, food preservation, pharmacys and plantation. Drying technique has novel advantages because of it's practical, easy and affordable. Mamalian sperm had been proved retain it's fertilizing capacity after preserved in dry condition.

Freeze-drying technique was used in this study. Sperm was freezed at -20°C and dried with freeze-dryer apparatus. DNA integrity was observed with Comet Assay methode in three groups of sample : fresh sperm, freeze-dried sperm and freeze-dried + preserved under 4°C in 7 days. Three variables were counted : % Comet, Visual Scor and % Tail DNA.

Manova was used to test the hypothesis. There was significant difference in % comet between fresh group and freeze-dried group ; there was very significant difference in % comet between fresh group and freeze-dried + preserved group ; there was very significant difference in % comet between freeze-dried and freeze-dried + preserved group. There no significant difference in Visual Scor between fresh group and freeze-dried group ; there was very significant difference in Visual Scor between fresh group and freeze-dried + preserved group ; there was very significant difference in Visual Scor between freeze-dried group and freeze-dried + preserved group. There no significant difference in % Tail DNA between fresh group and freeze-dried group ; there was very significant difference in % Tail DNA between fresh group and freeze-dried + preserved group ; there was very significant difference in % Tail DNA between freeze-dried and freeze-dried + preserved group.

The conclusion is freeze-drying technique does not impaire DNA integrity but the storage does. Freeze-drying technique could be applicated in sperm preservation with consideration on air tight preservation condition.

ABSTRACT

The objective of this study was to evaluate the application of *freezedrying technique* on human sperm preservation and to determine the influence of freezedrying process and 7 days storage under 4°C temperature on human sperm *DNA integrity*. The Posttest Only Control Group Design was used in this study. Population was sperm of adult male over 20 years old. The sperm should be in normozoospermia category and was obtained with consideration on WHO methode. The sample size was 12, obtained with simple random sampling methode. *Comet assay* was used to determine *DNA integrity* before freezedrying, immediately after freezedrying and 7 days storage after freezedrying. Manova was used to test the hypothesis. The results were : no significant difference in DNA integrity between fresh group and freeze-dried group ($p>0,05$); there was very significant difference in DNA integrity between fresh group or freeze-dried group compared with freeze-dried + 7 days storage under 4°C temperature ($p<0,01$).

Key words :

1. *Comet assay*
2. *DNA integrity*
3. *Freezedrying technique*