

## Intisari

Penelitian ini bertujuan untuk mengetahui *cryoprotectant* terbaik untuk pengawetan beku (*cryopreservation*) sperma ikan mas (*Cyprinus carpio* Linn.). Penelitian ini dilakukan di Laboratorium Balai Besar Inseminasi Buatan Singosari Malang dan Instalasi Budidaya Air Tawar Punten, Kota Batu, Malang. Bahan yang digunakan yakni *extender* berupa *Balanced Salt Solution* (BSS) dan bahan perlakuan berupa *cryoprotectant* yaitu *dimethyl sulfoxide* (DMSO) dan *bovine serum albumin* (BSA). Rancangan yang digunakan berupa rancangan acak lengkap yang terdiri dari 4 perlakuan berbeda yaitu BSS (tanpa *cryoprotectant*), BSS+DMSO 10% (*permeating cryoprotectant*), BSS+3% BSA (*non permeating cryoprotectant*), BSS+DMSO 10%+3% BSA (kombinasi *permeating* dan *non permeating*) dengan perbandingan sperma:larutan perlakuan sebanyak 1:9. Perlakuan dilakukan tiga kali ulangan yang diamati selama 28 hari. Parameter yang diamati meliputi warna, pH, konsistensi, motilitas individu, dan gerakan massa sperma. Analisis data dilakukan dengan menggunakan analisis Uji Kruskal Wallis H. Hasil penelitian juga menunjukkan penurunan motilitas pada keempat perlakuan, baik tahap setelah striping sampai tahap pengangkutan, maupun tahap pengangkutan sampai satu hari setelah *cryopreservation*. Motilitas tertinggi di di awal striping yakni perlakuan BSS+DMSO dengan motilitas rata-rata mencapai 78,33 % dan perlakuan BSS+BSA 3% memiliki motilitas terendah. Sedangkan tahap setelah *cryopreservation* hari pertama hingga minggu keempat pada seluruh perlakuan tidak menunjukkan penurunan yang signifikan. Pada tahap *after freezing* BSS dan BSS+BSA 3% merupakan hasil terendah dengan motilitas 0%, sedangkan perlakuan BSS+DMSO 10% menunjukkan hasil yang tinggi, dengan perlindungan relatif *cryoprotectant* mencapai 88,571%. Berdasarkan data-data tersebut, perlakuan menggunakan BSS + DMSO 10% yang merupakan *permeating cryoprotectant* menjadi perlakuan terbaik.

Kata Kunci : *Cryopreservation*, *cryoprotectant*, ikan, motilitas, sperma.

## Abstract

The objective of this study was to find the best cryoprotectant for frozen cryopreservation of goldfish sperm (*Cyprinus carpio* Linn.). This research was conducted in Laboratory of Balai Besar Inseminasi Buatan Singosari Malang dan Instalasi Budidaya Air Tawar Punten, Kota Batu, Malang. The materials used were of Balanced Salt Solution (BSS) as extender solution and dimethyl sulfoxide (DMSO) and bovine serum albumin (BSA) as cryoprotectant. The design used in this study was a complete randomized design consisted of 4 different treatments that were BSS (without cryoprotectant), BSS + DMSO 10% (permeating cryoprotectant), BSS + 3% BSA (non permeating cryoprotectant), BSS + DMSO 10% + 3% BSA (combination of permeating and non permeating) with a sperm and treatment solution ratio 1:9. The treatments were performed with three replications which were observed for 28 days. The parameters observed included color, pH, consistency, individual motility, and sperm mass movements. Data analysis was done by using Kruskal Wallis H test. The result showed the decrease of motility in all four treatments, either after stripping to transportation stage, and transportation stage to one day after cryopreservation. The highest motility was at the beginning of the stripping BSS + DMSO treatment with the average motility reaching 78.33% and the lowest motility was BSS + BSA 3% treatment with the average motility reaching 5%. While the first day until the fourth week after cryopreservation, of all treatments did not show any significant decrease. After freezing showed 0% motility, whereas 10% BSS + DMSO treatment showed a high, with cryoprotectant relative protection reached 88,571%. Based on these data, motility BSS + DMSO 10% which is permeating cryoprotectant determined to be the best treatment.

Keywords: Cryopreservation, cryoprotectant, fish, motility, sperm.