HOKKAIDO UNIVERSITY

Title	VIABILITY ASSESSMENT OF FROZEN-THAWED MOUSE BLASTOCYSTS BY THE DETECTION OF DEAD CELLS WITH 4'6'-DIAMIDINO-2-PHENYLINDOLE (DAPI)-FLUORESCENCE TEST
Author(s)	LOW, Boon Guan
Citation	Japanese Journal of Veterinary Research, 33(1-2), 83-83
Issue Date	1985-04-30
Doc URL	https://hdl.handle.net/2115/2338
Type	departmental bulletin paper
File Information	KJ00002374310.pdf

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

VIABILITY ASSESSMENT OF FROZEN-THAWED MOUSE BLASTOCYSTS BY THE DETECTION OF DEAD CELLS WITH 4'6'-DIAMIDINO-2-PHENYLINDOLE (DAPI)-FLUORESCENCE TEST

Boon Guan LOW

Department of Veterinary Obstetrics
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan

The DAPI-fluorescence test was employed to detect the presence of dead cells in frozen-thawed mouse blastocysts upon the removal of cryoprotectant.

Embryonic development *in vitro* was not affected by incubating mouse morula in DAPI for 1 minute and exposing them to ultraviolet light for 10 seconds.

Frozen-thawed mouse blastocysts were classified by their gross morphology under the light microscope as morphologically good, fair and poor. The number of dead cells per embryo in each group was 2.71 ± 3.02, 9.26 ± 3.21 and 11.55 ± 5.66, respectively. Embryos which were classified as morphologically good showed a survival rate of 70.8%, while none of the embryos in the fair and poor groups developed to expanded blastocysts.

The survival rate of the good embryos decreased as the number of dead cells per embryo increased ($P < 0.01$). Embryonic development *in vitro* was greatly affected when the number of dead cells per embryo increased to more than 3 ($P < 0.05$). Embryos which showed re-expansion of the blastocoelic cavity upon the removal of cryoprotectant had very few dead cells, and their survival rate *in vitro* was 95%.

Efficiency in selecting viable frozen-thawed mouse blastocysts was increased by 13.5–20.3% when the DAPI-fluorescence test was used to detect the number of dead cells in conjunction with the light microscope to assess gross morphology.