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Author(s)	KAWAMATA, Masakazu
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A STUDY OF THE DEVELOPMENTAL ABILITY
OF BISECTED MOUSE EMBRYOS *IN VITRO*

Masakazu KAWAMATA

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

Developmental potential of bisected mouse embryos of different developmental stages *in vitro* was studied. The effect of bisection on blastocoele formation, the number of cells and their size was also observed. In this experiment 8-cell embryos (group I), morulae (group II), decompacted morulae (group III) and early blastocysts (group IV) were used. Bisection of the above embryos was performed using a fine glass needle, which was attached to a micromanipulator without the use of any holding pipette.

Dichotomies into two identical half embryos were successfully obtained at the rate of 81.8%, 96.2%, 94.9% and 57.5% in groups I, II, III and IV, respectively. It was observed that dichotomy was less successful in embryos of group IV as compared to the other groups ($p < 0.05$). The developmental rates of the bisected embryos to blastocysts were 51.4%, 48.5%, 78.4% and 27.8% in groups I, II, III and IV, respectively. As for the control embryos, the developmental rate ranged between 85.3 and 100.0%. The bisected embryos that were obtained from decompacted morulae showed a much higher developmental rate than those of the other groups.

The time of the blastocoele formation was not significantly different between the bisected and the control embryos of groups II and III. Nevertheless, the bisected embryos of group I showed delayed formation of the blastocoele. In bisected early blastocysts, re-formation of the blastocoele was observed within 12 hours of culture. The blastocysts that developed from the bisected embryos contained 27.9 to 44.3% of the normal number of cells, and 24.9 to 40.0% of the normal volume of blastocysts.

The result of the experiment indicates that decompaction of morulae before bisection can minimize destruction of the blastomeres during bisection, thus increasing the developmental potential of bisected morula. However, with this method it was found that dichotomy was less successful in early blastocysts.