

Setup of a Micromanipulation System for ICSI –3

The Third issue of this series is about injectors which play an essential role in ICSI procedures.

What is an Injector?

The essential role of a micromanipulation system for ICSI is to inject a sperm directly into an oocyte. Micromanipulators are used to bring pipettes close to an oocyte and sperm. On the other hand, injectors are used to perform suction and injection. For holding an oocyte, use an injector to create suction pressure from a holding pipette. For injecting a sperm, aspirate a sperm into an injection pipette and bring it into an oocyte.

The injector is an instrument for performing suction and injection. In ICSI, two injectors are needed that are respectively used for holding and injection purposes. Injectors with fine control capabilities are specifically called microinjectors.

■For Holding Purposes

An injector is used to suction an oocyte to hold on a pipette. The tip of the holding pipette is fire-polished and smooth. Unless distance between a pipette tip and oocyte is comparatively far, the oocyte can be brought onto the pipette tip without precise control of pressure. Therefore, we usually suggest a pneumatic injector which provides only coarse control but is easy to maintain.

■For Injection Purposes

Precise control of pressure is required for aspirating and injecting a sperm. Oil-type injectors are provided with fine control and are generally more responsive than pneumatic types. Therefore, oil-type microinjectors have been used regularly for injection purposes.

On the other hand, for ICSI purposes, it has recently been found that pneumatic injectors can be used to control pressure as precisely as the oil-type with the aid of several techniques. When considering preparation and maintenance, the pneumatic type is much easier than the oil type. Due to these reasons, pneumatic type for injection purposes has increased in use.

Narishige has been selling the IM-9C pneumatic injector and it can be used for injection purposes. However, Narishige has recently designed a new pneumatic injector, IM-11, for injection purposes. IM-11 is not only pneumatic but also offers unique functions for facilitating setup and maintenance. IM-11 was initially launched for the European market.

Differences between Injectors

■Oil Type

As the name suggests, oil type is filled with oil to be used. Oil is less compressive than air, thus the oil type allows more precise control of pressure than the pneumatic type. It also allows for adjusting response by changing the type and viscosity of oil. On the other hand, the oil type entails careful handling when putting a pipette on a pipette holder and when filling an injector with oil. Information about the oil replacement procedure was discussed in Web News No.009.

*Narishige oil injectors do not incorporate injector oil as an accessory since the variety of oil available is your choice in terms of accessibility and price.

■Pneumatic Type

As the name suggests, pneumatic type performs suction and injection by the effect of air pressure. Since air is considerably compressive, the pneumatic type is generally less precise and responsive than the oil type. However, the pneumatic type has increasingly been used for injection purposes in recent ICSI applications.

The setup of a pneumatic injector is very simple in that you only connect components. It minimizes the trouble of setup and maintenance.



If you have any questions or need further information, please contact us.

Narishige Group Website

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