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TRANSFORMING IDEAS
INTO INSTRUMENTS

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MUROMACHI MICROWAVE FIXATION

New Microwave Brain Fixation System

Cat. MMW-05 (5kW)

General

In neurochemical studies of the brain, it is of great importance to measure accurately neurochemical events *in vivo*.

However, it is difficult to perform reproducible measurement of these events because rapid post-mortem changes occur in the brain concentrations of metabolites and neurotransmitters.

With the NEW Microwave Brain Fixation System by Muromachi, a living mouse or rat is positioned inside the applicator and, in less than 1 second, the microwave beam stops all brain chemistry at the level present in the living animal.

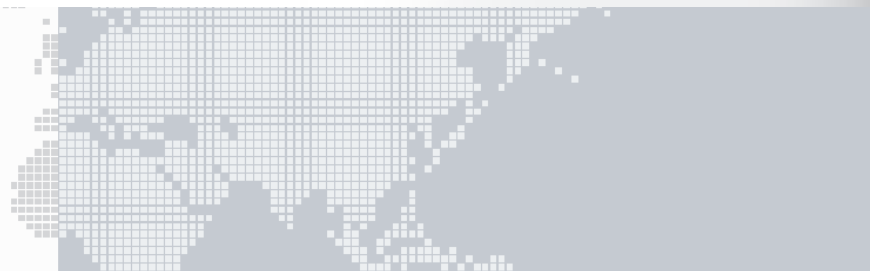
Measuring brain chemistry *in-vivo* is possible!



THE FASTEST AND MOST EFFECTIVE KNOWN METHOD OF HALTING BRAIN CHEMICAL ACTIVITY

brain fixation occurs in 1 second

activity of degrading enzymes is blocked



Prior to analysis of:

- Phosphorylated proteins
- Acetylcholine, Serotonin, Endorphins
- Prostaglandins, Catecholamines
- C-AMP, C-GMP, GABA, DOPA

NEW features:

- Improved usability - touch screen
- Air-cooled (no water circulation)
- CE-certified
- Absolute safety - negligible leakage

Ugo Basile: more than 25,000 citations

Various techniques have been developed to **prevent post-mortem changes**. One of the more common method is cooling or freezing by immersion of the decapitated head in liquid Nitrogen or cooled Freon to **inactivate enzymes** involved in the metabolism of these compounds.

Cooling is not fully effective in preventing post-mortem changes as the time required to freeze deep structure of the brain may range from 10 - 90 seconds; post mortem changes will occur during this period.

An alternate method is microwave heating to inactivate enzymes.

The microwave method has several advantages over cooling or freezing:

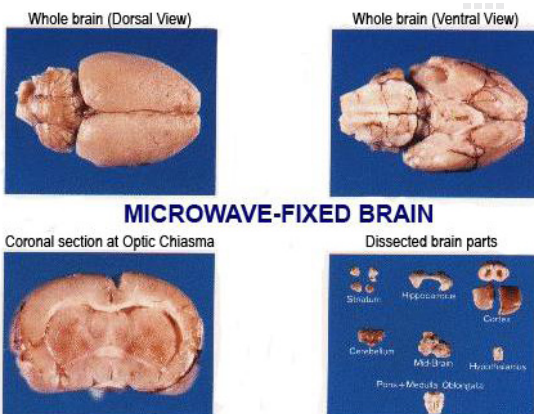
- The enzymes in the whole brain can be completely inactivated in a very short time
- The brain can be dissected easily and reproducibly at room temperature

Microwave fixation system must satisfy the following criteria:

1. elevate the temperature of brain up to 75-90°C as rapidly as possible, by effectively focusing microwave energy on the animal head
2. give the same results from animal to animal
3. be easily and safely used by personnel not experienced in microwave

Instrument Description

Thanks to Patented Microwave Focus Applicators, microwaves are channeled and focused by the wave guide from above the head, rather than in front. The entire animal head is placed in a uniform microwave field. Movements of the head do not change the field strength or microwave distribution.

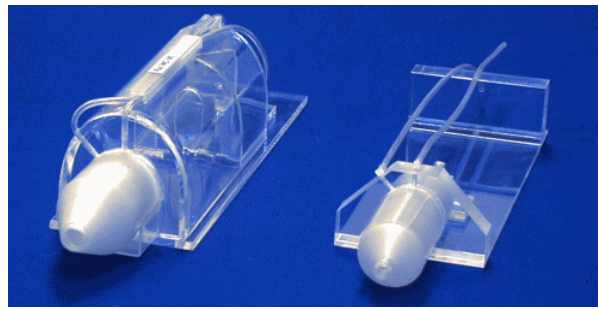


Uniform fixation of the whole brain is thus achieved, without "over cooking" and damage to the hypothalamus.

Muromachi's unique applicators provide protection to the researcher and also compensate for individual differences between animals, giving more reproducible results.

The Muromachi Microwave Fixation Systems are safely designed, so that the microwave leakage will not exceed 1 mW/cm² (well below the safety standards).

The Microwave Fixation System comes with specific applicator heads and water-jacketed animal holders:



Ordering Information

MMW-05 Microwave Fixation System 5KW, including 1 Applicator head and 1 animal holder, to be selected

Applicator heads

TAW-174P for mouse holder
TAW-424SP for rat holder WJR-S
TAW-424MP for rat holder WJR-M & L

Water-Jacketed Animal Holders

WJM-24 for mice 15-20g
WJM-28 for Mice 20-40g
WJR-S for Rats 150-250g
WJR-M for Rats 250-400g
WJR-L for Rats 400-500g

Physical

Power 380-440VAC 20A
3-phase is required
 Dimensions 75(w)x55(d)x128(h)cm
 Weight 103Kg
 Shipping weight 195Kg
 Packing 81x100x132cm

Bibliography

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