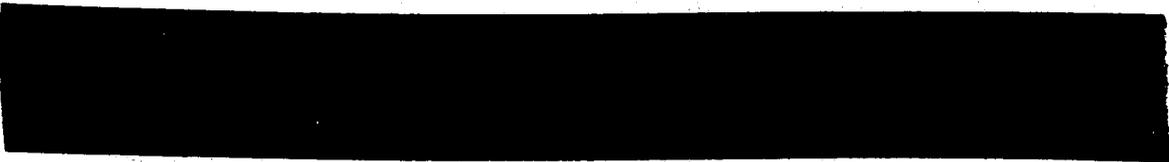


DRUG STUDIES OF MWR EFFECTS ON THE BLOOD BRAIN BARRIER



Rats weighing from 150-250 grams were exposed in a circularly polarized waveguide chamber to pulse modulated MWR at 1.3 GHz for 2-3 weeks. Exposure was for 3 hours per day at specific dose rates (SAR) of from 0 to 2.6 mW/g. The zero exposure group served as control. Other laboratories have shown significant changes in the blood brain barrier (BBB) following MW irradiation at non-thermal levels. To examine this possibility, the animals were tested for their rate of absorption of the anesthetic sodium barbital.

Since the slow onset of barbital anesthesia is due to slow passage through the BBB, then if MWR had altered this barrier, we would expect the irradiated animals to show a more rapid onset of the anesthetic. Immediately after the final exposure session each of the experimental and control animals were given an interperitoneal injection of barbital sodium, at a dose of 200 mg/kg (in saline solution). The parameter measured was time taken for loss of the righting reflex. At the SAR's of 0.42, 0.96 and 2.6 mW/g no significant differences between control and experimental animals could be detected.

In another series of experiments, irradiated animals along with matched controls were injected with dopamine (100 mg/kg IP). Normally excluded from the brain by the BBB, an elevation in brain dopamine levels would be expected to yield some evidence of motor dysfunction. After MWR exposure at an SAR of 2.6 mW/g for two weeks, the rats were injected and tested for degree and quality of motor activity on the open field (square crossing, rearing, grooming and defecation). Although there was observed more frequent defecation with regard to the experimental versus the control rats, no significant differences in motor activity were observed.

These data do not support the hypothesis of a significant alteration of the BBB by low level MWR. Further, they suggest that any such alterations, were they in fact induced, were not functionally significant.