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CONFERENCE ON INTOXICATION DUE TO ALKYLMERCURY TREATED SEED

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AN EXTRACORPOREAL COMPLEXING HAEMODIALYSIS SYSTEM FOR THE TREATMENT OF METHYLMERCURY POISONING

II: IN VIVO APPLICATIONS IN THE DOG

by

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Greater than 99% of the methylmercury in blood is protein bound, probably as a result of its high chemical affinity for sulfhydryl groups. The binding of methylmercury to protein sulfhydryl groups can be reversed by the addition of sulfhydryl containing complexing agents. For example, the sulfhydryl containing amino acid, cysteine, added to blood in sufficient concentrations will convert over half of the methylmercury in whole blood to a non-protein bound diffusible form. This information is applied to the in vivo use of a standard haemodialyzer (for description see abstract by Abbasi et al.) for the removal of methylmercury from dogs dosed with methylmercury chloride.

At an extracorporeal cysteine concentration of 10^{-2}M in whole blood, it was possible to achieve a 40% reduction in whole blood mercury concentrations during a single pass through the dialyzer using a blood flow of 30 ml/min. The blood compartment showed a biphasic exponential decline in methylmercury with time during dialysis. More mercury was removed during dialysis than could be accounted for by the reduction in blood concentrations alone indicating that mobilization must also have taken place from tissue compartments. The reduction in whole body methylmercury during a five-hour dialysis period was as high as 14% of the original dose administered 18 hours previously. Animals dosed with methylmercury labelled with the gamma ray emitting isotope, ^{203}Hg, exhibited a reduction in radioactivity in the head region suggesting that methylmercury had been removed from the brain, the principal target organ.

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