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KEY WORD : BLOOD FLOW / BRAIN IMAGING / HMPAO / TECHNETIUM-99M

USA KULLAPRAWITHAYA : PREPARATION AND LABELLING OF HEXAMETHYLPROPYLENEAMINE OXIME WITH TECHNETIUM-99M FOR USE AS REGIONAL CEREBRAL BLOOD IMAGING AGENT. THESIS ADVISOR : JATUPOL SANGSURIYAN. THESIS CO-ADVISOR : ASSISTANT PROFESSOR CHYAGRIT SIRI-UPATHUM. 96 pp.
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A study of Hexamethylpropyleneamine oxime and labelling with Technetium-99m has been conducted. The HMPAO was synthesized by condensation of 2,3-butanedione monoxime with 2,2-dimethyl-1,3-propanediamine in benzene or ethanol solution and then the product was reduced with sodium borohydride at low temperature in anhydrous ethanol. HMPAO was prepared as lyophilized kit.

The optimum gradient consists of 0.5 mg d,l-HMPAO, NaCl 4.5 mg, $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ 10 microgram and pH 9.0-10.0. Upon labelling with technetium-99m, the radiochemical purity after 5 minutes was greater than 90 %, and remained greater than 85 % at 60 minutes after labelling. The optimum activities for labelling are between 25 to 35 mCi/5 ml.

Biodistribution studies were performed on Sprague-dawley rats, the results showed great affinity for brain uptake : 2.41 % and 1.9 % at 20 min and 60 min post injection, respectively. The shelf-life of the kits was 16 days upon storing at 4 °C