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[Radiology](#). 1996 Dec;201(3):731-5. doi: 10.1148/radiology.201.3.8939223.

Quantification of Tumor Uptake of Iodized Oils and Emulsions of Iodized Oils: Experimental Study

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Abstract

Purpose: To optimize use of iodized oil for diagnostic computed tomography (CT) enhanced with iodized oil and for interstitial radiation therapy with iodine-131-labeled iodized oil, the authors quantified the distribution of iodized oil after injection of different formulations of iodized oil into the hepatic artery.

Materials and methods: I-125-labeled iodinated ethyl ester of poppyseed oil in two viscosities (iodized oil ultrafluid [viscosity, 0.04 Pa/sec] and iodized oil fluid [viscosity, 0.17 Pa/sec]) was injected (pure forms and three different emulsions of each) into the hepatic artery of rabbits bearing VX2 tumors in the liver. All rabbits received a radiation dose of 4 MBq per kilogram of body weight in 0.1 mL/kg iodized oil. Animals were killed 4 days later, and iodized oil uptake was evaluated in the tumor, nontumorous liver, and lung.

Results: There were no statistically significant differences in uptake between pure iodized oil ultrafluid or fluid or between the same type of emulsions made with each type of iodized oil. Lung uptake was significantly higher with pure iodized oil ultrafluid and fluid (19.75 kBq/g +/- 3.25 [standard error of the mean] vs 19.48 kBq/g +/- 6.15, respectively) than with any emulsions (range, 3.72-8.14 kBq/g; mean, 5.68 kBq/g) except the small-droplet oil-in-water emulsion (10.51 kBq/g +/- 1.18). The ratio of tumor to nontumorous liver uptake of iodized oil was significantly higher with large-droplet water-in-oil emulsions made of iodized oil ultrafluid or fluid (10.26 +/- 2.88 and 9.53 +/- 0.64, respectively) than with any other product (range, 4.07-5.38; mean, 4.49).

Conclusion: Use of large-droplet water-in-oil emulsions limited lung uptake and increased tumor uptake of iodized oil after intraarterial hepatic injection in rabbits bearing VX2 tumors in the liver.

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