Meinertz, J.R., T.M. Schreier, and S.L. Greseth. 2006. Isoeugenol total residue depletion in the edible fillet tissue of rainbow trout, *Oncorhynchus mykiss*. Submitted to FDA Center for Veterinary Medicine, March 14, 2006. 687 pages.

Summary

There is a critical need for an anesthetic/sedative with zero withdrawal time in U.S. public aquaculture and fishery management. AQUI-S™ is a fish anesthetic/sedative approved in New Zealand and Australia that is also a candidate anesthetic being developed for approval by the U.S. Food and Drug Administration for use in the U.S. Among the data required to gain approval for use in the U.S. are data describing the composition and depletion of all AQUI-S™ residues from fish fillet tissue. An AQUI-S™ total residue depletion study was conducted by exposing market sized rainbow trout, *Oncorhynchus mykiss* (mean weight, 502.7 ± 54 g; s.d.) for 60 min in 17°C water to 17.9 mg/L of AQUI-S™ prepared with ^{14}C-[URL]-isoeugenol (the active ingredient). Groups of fish (n = 6) were sampled immediately after the exposure (0 h sample group) and at 0.5, 1, 2, and 4 h thereafter. Total isoeugenol equivalent residue concentrations in the fillet tissue were determined by oxidizing triplicate subsamples of homogenized skin-on fillet tissue from each fish to ^{14}C carbon dioxide and enumerating the radioactivity by static liquid scintillation counting. Isoeugenol concentrations in fillet tissue were determined by extracting homogenized fillet tissue with solvents and determining the isoeugenol concentrations in the extracts with a high performance liquid chromatograph. The mean total isoeugenol equivalent residue concentrations in the 0, 0.5, 1, 2, and 4 h sample groups were 55.4, 32.0, 19.8, 11.3, and 4.9 *u*g/g. The primary AQUI-S™ residue in fillet tissue from all exposed fish was isoeugenol. The mean isoeugenol concentrations in the 0, 0.5, 1, 2, and 4 h sample groups were 48.9, 26.5, 15.3, 7.2, and 2.2 *u*g/g.