PMSD/ISB

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Captan Metabolism Studies Submitted for Registration Standard. RCB No. 4012. MRID No.406580-02 through -06.

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The Captan Task Force has submitted a set of metabolism studies which were performed to comply wtih the generic data requirements of the Captan Registration Standard. These studies include a goat metabolism study with sidechain-labeled captan and two hen metabolism studies, one with sidechain-labeled captan and the other with ring-labeled captan, all of which are submitted to satisfy the requirements for Nature of the Residue in Animals. Nature of the Residue in Plants requirements are addressed by two plant metabolism studies, one with sidechain-labeled captan and the other with ring-labeled captan. A detailed review of these studies will be presented with the Registration Standard material.

Briefly, in the feeding study with one lactating goat and a control, 29.1% of the administered dose was recovered: 20.5% in the feces, 6.0% in the urine, 1.5% in the milk, and 1.2% in the tissues and blood. The major metabolite in the urine was identified by co-chromatography as thiazolidine-2-thione-4-carboxylic acid (TCC); the only other identified urinary metabolite was dithio-bis-methanesulfonic acid (DMS). Most of

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the radioactivity in milk apparently is incorporated into natural products, i.e. fatty acids and casein. The highest tissue residues were found in liver and kidney, and the largest amounts of radioactivity from both were extracted into methanol. However, analysis of the methanol extracts by high-performance liquid chromatography (HPLC) showed only material eluting at the solvent front, possibly indicating bound or incorporated metabolites.

In the sidechain-labeled hen study, analysis of tissues, eggs, and excreta from 10 dosed hens indicated that 44% of the label was recovered in the excreta, 1.26% in the tissues and blood, and 0.19% in the eggs. The only metabolites identified by HPLC were found in the liver (TCC) and in the kidney (TCC and DMS). Ten hens were also dosed in the ring-labeled study, and 67% of the 14C was found in the excreta, 0.31% in the egg yolk, 0.74% in the egg white, and 4.44% in the tissues and blood. Three metabolites were detected by thin layer chromatographic (TLC) and HPLC analysis: tetrahydrophthalimide (THPI) and 3-hydroxy-and 5-hydroxytetrahydrophthalimide (3-OH THPI and 5-OH THPI).

Plant metabolism studies using both ring- and sidechain-labeled captan were done on lettuce and tomato plants. Leaves, stems, and edible fractions were taken for metabolite characterization by TLC, HPLC co-chromatography, and mass spectrometry. In the [trichloromethyl-14C]-captan study, the major plant residue was captan, along with minor metabolites such as captan epoxide. The trichloromethyl moiety was mainly released as 14CO2. In the ring-labeled studies, the major residues were captan and THPI. In this study the lettuce sample residue was confirmed by analysis using the enforcement method.

It is not believed that these studies, although required by the Registration Standard, will necessitate additional input into the Special Review currently underway since they show the same metabolic pathway in plants and animals as previous studies have shown. No new plant or animal metabolites were found in these studies and even the animal studies with the sidechain label show the same conversion products found in the rat studies discussed in PD 2/3.

cc: Tina Levine, circ (7), R.F., S.F., PMSD/ISB, TOX (Copley), Gray

RDI: A.R. Rathman 8/16/88 R.D.Schmitt 8/17/88

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