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TOXICITY OF FORMALDEHYDE IN EXPERIMENTAL ANIMALS

—CONCENTRATIONS OF THE CHEMICAL IN THE ELUTION FROM DISHES OF FORMALDEHYDE RESIN IN SOME VEGETABLES —

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ABSTRACT

The study composes of the following experiments:

- 1) The first experiment was carried out in order to calculate the lethal dose (LD₅₀) of formaldehyde and of formalin solution.
- 2) The second one was to examine the quantitative method and to measure the concentration of formaldehyde in solution eluted from plastic bowls made of formaldehyde resin.
- 3) In the final experiment formaldehyde in some foods was measured.

Principal results obtained were as follows:

- 1) LD₅₀ of formaldehyde by oral administration was determined to be 500-800 mg/kg for rats.
- 2) The maximum allowable concentration of the chemical for chronic poisoning was estimated to exist at the level of around 25 to 30 mg/day/50 kg for man.
- 3) However, it was conceivable that various kinds of food would contain formaldehyde as high as almost 20 ppm. More elaborate studies are required on this point.
- 4) It was confirmed that formaldehyde is eluted from plastic dishes and bowls made from a monomer of formaldehyde from the non-detectable concentration at 40°C up to 20 ppm at 90°C, and up to almost 400 ppm in solution of 4% acetic acid of 90°C, showing only 10 ppm at 40° to 50°C, after leaving the solutions in the bowls for 15 minutes.

Formaldehyde is used for various purposes in industry, and the manufacturing industry of synthetic resin, deodorizer, sterilizing agent, antiseptics, dye, leather, rubber and synthetic fiber and the industry of water proofing and re-