

Gamma Irradiation Advocated To Prevent Trichinosis

NEW YORK—Gamma irradiation of pork to prevent trichinosis, through x-ray, cobalt-60, or atomic waste fission material, would probably be more effective and desirable than methods used so far, which embrace cooking garbage fed to hogs, inspection of hog carcasses, low temperature treatment, and thorough cooking by the consumer. The irradiation process is analogous to that of pasteurization which revolutionized the milk industry.

This was the conclusion in a paper by S. E. Gould, H. J. Gomberg, and F. H. Bethell, University of Michigan scientists, before the 81 annual meeting, American Public Health Association, here Nov. 9 to 13. The proposed method is, they say, sanitary, simple, and rapid; apparatus is compact and long-lasting; the required time for irradiation is 1.75 minutes. It is effective and the wholesomeness of the meat is preserved. No radioactivity is induced in the meat, no flavor changes produced, and no harm to the pork eater results, they add.

The method requires but a single room, an irradiation source and technical staff of one or two persons for a large packing plant. The estimated cost for a plant with daily capacity of 2000 hogs would be 2.3 mills per pound of pork processed, if total investment is amortized over five years, or 1.5 mills, over 10 years. The cost in subsequent years is even less. For a plant with one sixth this capacity the cost would be 7.4 mills. Hence the larger and more centralized plant would be more desirable.

The method would eliminate need for special processing, such as heating, freezing, and curing of ready-to-eat pork products such as sausages and smoked ham, which comprise 30% of produced pork. Those producers who adopt the method early should have a tremendous economic advantage, the authors opine, citing the advertising value of pasteurized milk.

The great frequency of trichinosis in the United States has been a source of "astonishment and horror to many people in other countries," the authors stated. Microscopic inspection of pork has not been deemed suited to our high-speed processing methods, even though practiced in many other countries with success. The low temperature method (-36°F . for two minutes at the center of the meat) is too expensive.

As of Sept. 1, 41 states had adopted requirements that all garbage fed to hogs be cooked thoroughly to kill possible

infection, which implies boiling for 30 minutes. This also theoretically kills vesicular exanthema, hog cholera, foot-and-mouth disease, salmonellosis, and tuberculosis. Garbage cooking is not the sole solution, since even among farm-fed and grain-fed hogs, and in Canada where all garbage must be cooked, incidence of infection is 0.3 to 0.7%. It is estimated that 25% of all Americans, during their lifetime, will harbor trichina larvae in their muscles, with mortality rate of 5 to 6%.

For two years experiments have been conducted on effects of ionizing radiation on trichina larvae *in vitro* in rat muscle and in pork. A dose of 3500 R. x-rays will render most of the maturing parasites sexually sterile, while 5000 to 6000 R. will prevent most from developing to adult forms. With cobalt-60, 15,000 R. produced sterility in rat muscle, while 18,000 R. inhibited maturation of the larvae. Waste fission nuclear material produces the same results. Such treatment produced no changes in flavor of pork.

With a single radiation unit it would be possible to apply irradiation at any one of five points: live animal prior to slaughter; carcasses before, during, or after chilling; finished packaged products prior to shipment. About 20 hours would be needed for irradiating

one day's production, but since it is necessary to chill carcasses for 24 hours, the two could be done simultaneously.

Chemicals in Foods. When considering possible toxicity of chemical additives to foods, one must not be content with apparent harmlessness to the normal healthy individual, but one must take into consideration the fact that a segment of population is undergoing various physiologic changes or stresses, such as in pregnancy, said William J. Darby, professor of biochemistry and director of the division of nutrition, Vanderbilt University school of medicine. Such a segment might be peculiarly susceptible to the particular food additive.

Additives with definite toxicologic effects are numerous. Lithium chloride, used as a salt substitute, produced widely-known tragic effects. Cadmium, a contaminant from containers in preparation of certain frozen confections, resulted in acute toxicologic episodes. Dulcin, once permitted as an artificial sweetener, is found sufficiently toxic to animals to render it unsafe for foods. More recently coumarin, on the basis of studies in animals, has been found toxic, and is no longer used as flavoring for human food.

Most additives found harmful show immediate apparent injury. One must not neglect those additives which might have a cumulative effect and not immediately apparent as harmful. The effect may be chronic in character. Possibility of long-term chronic toxicity related to all ages must be kept in mind. Total population must be considered.

Growth Factor in Animal Proteins Stimulates Chick Growth

CHICAGO.—An unidentified growth factor in animal proteins increases the growth rate of a fast growing strain of chickens. The factor, present in meat scraps, fish meal, and fish solubles, was described by H. R. Bird, University of Wisconsin, at the 20th anniversary convention of the National Renderers' Association here Nov. 16 and 17. Ten-week-old chickens fed a diet including fish meal weighed an average of 0.38 pound more per bird for male birds and 0.21 pound more per bird for females than control lots fed a complete diet entirely from plant sources.

There is evidence that the new factor is supplied by some fermentation products, such as the antibiotic residues. It also appears to be synthesized by certain bacteria. Autoclaving at pH's ranging from 2 to 11 does not destroy the factor. The substance is water soluble. So far it

has not been isolated. The biggest difficulty here is the lack of a suitable assay. Response in chick growth is the only known means of detection. The substance has been shown not to be vitamin B₁₂ by including crystalline B₁₂ in excess of requirements in the diet.

Fats in Feeds. Besides being used to improve texture, dusting properties, and color, animal fats are now being used to increase the energy content of feeds. At present prices inedible tallow is more economical as an energy source than feed grains. White grease is not quite as economical as corn but it is still within the price range of other grains. Experiments show, said Dr. Bird, that animal fats are utilized both by growing chicks and by laying hens.

The first requirement for a fat to be used in feed is that it should be stabilized or preserved with some recognized anti-