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Toxicity of Salol

(Submitted through letter of M. M. Burleson to Dr. D. B. Lowe, 12/27/45;
and personal conferences of 1/4/46 and 1/16/46)

The question is, whether the presence of 1 to 3 per cent of phenyl salicylate in Koroseal would be a health hazard, in the use of Koroseal for packaging foods?

Reply: Phenyl salicylate is very slightly soluble in water (1:6700) so that it would not tend to pass from the wrapper into watery foods, such as fruits, vegetables, or lean meat. It is freely soluble in oils and fats, and would therefore leach more or less into fatty foods, such as bacon, butter, peanut butter, and cheese; unless it is firmly bound in the Koroseal.

It is reported that about half an ounce (about 15 Gm.) of Koroseal film is used in packaging a pound of foods. It seems unlikely that the daily consumption of fatty foods packaged in Koroseal would ever exceed half a pound; but setting the upper limit of the daily consumption of such foods at a pound, the half ounce of packaging with 1 to 3 per cent of salol would contain 0.15 to 0.45 Gm. of salol. This is the maximum quantity that would be consumed per day on the extreme assumption that all of the salol leached into the food. The question is whether such quantities would be a health hazard?

Reply: From the experience of the use of phenyl salicylate in clinical medicine, it may be definitely affirmed that these amounts have no deleterious effects when used for a few days or weeks. The U.S.P. states the "average" dose of phenyl salicylate as 0.3 Gm. This would usually be administered three times daily. The U. S. Dispensatory states the daily dose as 0.3 to 1.0 Gm. The smallest dose that I have found reported as fatal is 24 Gm. taken in the course of three days.

I have not found any data on the long-continued administration of phenyl salicylate; but as it is decomposed into phenol and sodium salicylate before it is absorbed, the data for these substance can be applied.

Clinical experience with sodium salicylate shows that 0.5 to 2.0 Gm. daily may be consumed indefinitely without injury to health. Acetyl salicylic acid is used extensively and indefinitely in daily doses of 0.6 Gm. No harm need therefore be expected from the salicyl component of phenyl salicylate.

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The toxicity of long-continued phenol administration has been studied extensively by adding it to the drinking water of rats. Heller and Pursell found 0.5 per cent harmless, even when continued for three generations. Deichmann and Oerper report some decrease of growth and resistance with 0.2 per cent. Accepting this as the lowest deleterious amount, and assuming that the human susceptibility is similar, would give the lowest deleterious dosage for man as 2 Gm. This is ^{two times} twice the maximum amount that could conceivably be introduced by Koroseal containing three per cent of salol.

Conclusion: It is my opinion that the use of Koroseal in packaging foods does not constitute a health hazard.

The extreme assumptions that have been made, however, do not render the "theoretical margin" very wide, and it would be desirable to make leaching experiments with fatty foods.

Respectfully,

Torald Sollmann, M.D.

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