

"Tests were made on lard on a small scale in the laboratory. 0.05% and 0.10% of samples A and B increased a 5 hour lard to 6 hours. One percent of each sample increased it to 23 hours."

A later report presented essentially this information:

"The antioxidant materials were tested in our pilot plant in a shortening made from a blend of meat food fats and unhydrogenated vegetable oils. About 2,000 pounds of shortening could be handled in the pilot plant, so the test was on a semi-commercial scale. Laboratory work showed that the best results were obtained if the antioxidants were added prior to deodorization, so this plan was followed. After deodorization, the products were passed over a chilled roll and packaged in the same manner as they would be handled commercially. Our 'active oxygen stability' results on the shortenings thus prepared are as follows:

	A. O. M.
Control.....	7 hours
Control + 0.05% sample 'A'.....	12 hours
Control + 0.05% sample 'B'.....	16 hours
Control + 0.05% sample 'C'.....	25 hours."

Comparable results were obtained in this laboratory when these shortenings were tested by the modified Swift Test. The relative stability of these samples was also checked by oxygen absorption and peroxide measurements (Table VI) after long periods of storage.

TABLE VI

Peroxide Oxygen Content (Ferric Thiocyanate Method) of Stabilized Blended Shortening Prepared by a United States Packing Firm, After Storing 7½ Months at 33° F. and Subsequently 1½ Months at Room Temperature

Sample	Peroxide value
	<i>milli-equivalents of peroxide per kg.</i>
Control.....	33.8
Control + 0.05% sample "A".....	32.4
Control + 0.05% sample "B".....	20.5
Control + 0.05% sample "C".....	7.4

Through the cooperation of a Canadian firm a similar experiment was carried out with lard, the antioxidant being added in this case before the lard was rendered. The samples were held at 20-25°C. and then tested with the results shown in Table VII.

Baking and deep-fat frying tests by the School of Household Science, Macdonald College, showed no difference in flavor and other properties between control samples of lard and blended shortening and samples containing Formula "C."

TABLE VII  
Stabilization of Lard on a Commercial Scale

Sample	Stability time Modified Swift test	Peroxide value Ferric thiocyanate method
	<i>minutes</i>	<i>m.e. per kg. After aging 30 days</i>
Raw lard control.....	65	61.8
Raw lard + 0.055% Formula "C".....	190	14.6
Finished lard control.....	60	87.1
Finished lard + 0.055% Formula "C".....	105	23.7

### Summary

The process of developing a practical antioxidant consisting of natural occurring food substances has been described. The efficiency of the final product, which is based upon wheat-germ oil extracted from wheat-germ by means of ethylene dichloride and which contains added citric acid, has been verified by means of a modified Swift test, oxygen absorption and peroxide estimations. The practicability of the antioxidant has been demonstrated on a plant scale.

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