

TABLE VI
N. D. G. A.

| | Hours (AOM) | Days Before Rancid at 140°F. | Days Before Crackers Rancid at 140°F. |
|--|----------------|--|--|
| Refined Prime Steam Lard..... | 5 | 6 | 11 |
| Refined Prime Steam Lard + 0.01% N.D.G.A. | 18 | 25 | 25 |
| Refined Prime Steam Lard + 0.02% N.D.G.A. | 35 | 32 | 32 |
| Refined Prime Steam Lard + 0.05% N.D.G.A. | 45 | 35 | 35 |
| Refined and Bleached Cottonseed Oil..... | 12 | 10 | |
| Refined and Bleached Cottonseed Oil + 0.02% N.D.G.A. | 14 | 12 | |
| Refined and Bleached Soybean Oil..... | 13 | 12 | |
| Refined and Bleached Soybean Oil + 0.02% N.D.G.A. | 26 | 18 | |

of the antioxidant at various stages of the processing was investigated. Table VII summarizes the results.

TABLE VII

| | Hours (AOM) |
|---|----------------|
| Prime Steam Lard..... | 6 |
| Prime Steam Lard + 0.02% N.D.G.A. added in al- cohol at 140°F. | 50 |
| Prime Steam Lard refined with alkali and 0.02% N.D.G.A. added at 140°F. | 48 |
| Prime Steam Lard refined with alkali, deodorized at 375°F. for 2 hours, cooled to 140°F. and 0.02% N.D.G.A. added in alcohol..... | 42 |

As yet, we have been unable to confirm the reported results. The discrepancy might be due to difference in purity of the N. D. G. A. used. A further possibility is the method of handling samples prior to determination of the stability. All of our samples were filtered. It is likely that if solid particles of N. D. G. A. remained suspended in the fat greater stabilities would be obtained.

N. D. G. A. imparts no objectionable odor or flavor to freshly deodorized fats, but on standing or incubation a disagreeable metallic flavor is sometimes noted. The product has been shown to be harmless when administered in small amounts and has been approved at a 0.01% level for use in lard by the Meat Inspection Division (13).

Ascorbic Acid, Its Isomers and Derivatives. In 1939 ascorbic acid was proposed as an antioxidant for fatty emulsions (13). However, it is a very weak antioxidant for anhydrous fats, especially those of animal origin. This is due probably to its insolubility.

Recently Riemenschneider, Turer, Wells, and Ault (14) proposed fat soluble derivatives of l-ascorbic and d-isoascorbic acid and reported data to show they were quite effective in lard and that their effect is markedly enhanced by combination with phospholipins and/or tocopherols.

TABLE VIII
D-isoascorbyl Palmitate, Lecithin and Tocopherols

| | Hours (AOM) | Days Before Rancid at 140°F. | Days Before Crackers Rancid at 140°F. |
|--|----------------|--|--|
| Prime Steam Lard..... | 4 | 7 | 12 |
| Prime Steam Lard + 0.04% d-isoascorbyl palmitate, 0.04% lecithin, and 0.01% tocopherols | 23 | 24 | 16 |
| Prime Steam Lard + 0.04% d-isoascorbyl palmitate, 0.04% lecithin, and 0.01% tocopherols (deodorized) | 63 | 21 | 18 |

Table VIII gives results obtained on lard, adding 0.04% d-isoascorbyl palmitate, 0.04% lecithin and 0.01% tocopherol to Prime Steam Lard and to deodorized Prime Steam Lard.

The isoascorbic acid ester is a white crystalline product easily soluble in fats. It imparts no objectionable odor or color. The combination with lecithin darkens slightly when heated to deep fat frying temperatures. Deodorization improves the stabilizing effect. The ester is not commercially available at the present time.

With the exception of gum guaiac, which has been successfully used in lard for a number of years, further work is necessary in order to evaluate the practical applicability of the antioxidants.

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Report of the Committee on Review of Scientific Literature of Fats, Oils and Soaps

THE tenth annual report of this committee has been completed and was published in two installments in the March and April numbers of *Oil and Soap*.

Material for this non-critical review was condensed from original sources where possible, and from Chemical Abstracts. This was classified and summarized as briefly as possible with no attempt to evaluate each contribution or to rate it by the consideration given it in the review.

The review should be a source of information on developments and should indicate the trend of scientific activities in the oil and fat field. We hope that the report will be of service to the members of the American Oil Chemists' Society and other readers of our official publication *Oil and Soap*.

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