the recovery of the vitamin from the other baked goods.

TABLE III

Destruction of Vitamin A During Baking of Pie Shells

Baking Time	Color of Crust	Vitamin A in Fat Used	Vitamin A Recovered	Recovery
Minutes		*Units/Lb.*	*Units/Lb.*	*Per cent*
35	Light brown	9,760	6,790	70
40	Medium brown	Same	3,535	36
45	Dark brown	Same	1,365	14

In products of low fat content, such as bread, biscuits, and cake, which are baked under moderate conditions, vitamin A appears to survive the baking process to the extent of 80 to 100 per cent. In pie crust, which undergoes more severe baking conditions, there is appreciable destruction, the amount depending on the extent of the baking.

These data confirm preliminary results obtained by spectrophotometric assays of various original fortified fats and fats recovered from baked goods.

Summary

Various types of baked goods prepared from fats fortified with vitamin A have been assayed for the vitamin by the Carr-Price color reaction and by U.S.P. bio-assays.

In products such as bread, biscuits, and cake, which are baked under moderate conditions, it appears that 80 to 100 per cent of the vitamin survives the baking process.

In pie crust, which undergoes more severe baking conditions, considerable destruction, depending on the extent of the baking, is likely to occur.

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BIBLIOGRAPHY

1. Harrelson, R. T., *et al.*, Iowa State College, Journal of Science, XII, 353 (1939).
2. Dyne, H. C., *ibid.*, XIV, 29 (1939).
3. Wilkie, J. B., Ind. Eng. Chem., Anal. Ed., *13*, 209 (1941).

Use of Ground Glass Covers in Glycerol Oxidation

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The standard methods of analysis of glycerol of the American Oil Chemists' Society require that the bichromate oxidation of glycerol be continued for two hours in a boiling water bath (1). It is further specified that the oxidation mixture be kept from dust and organic vapors, such as alcohol and ether, until the titration is completed.

In this laboratory considerable difficulty has been experienced with vibration from the boiling water causing the cover glasses to chatter and creep off the top of the beakers thus exposing the contents to danger of evaporation and objectionable fumes of ether, alcohol, etc., which are usually present in the atmosphere of a laboratory devoted to work on fats and oils.

To avoid this source of error use has been made for some time of 500-ml. beakers without lip and provided with a ground glass rim. The underside (convex surface) of the watch glass used to cover the beaker is ground in a circular segment so that when placed over the beaker the ground surface of the beaker rim and the ground surface of the cover glass is in contact. Steam from the solution in the beaker wets the two contacting ground surfaces causing them to adhere and effectually preventing the watch glass from "riding" off the beaker.

Before introducing this modification in the glycerol procedure it was necessary to ascertain whether sufficient CO_2 is trapped in the beaker to influence the course of oxidation.

Assuming 0.2 grams of 100 per cent glycerol is oxidized, a volume of approximately 145 ml. of CO_2 at 0° and 760 mm. is liberated. The volume of the beaker above the surface of the contents is approximately 440 ml. It is apparent that at no time is a very great concentration of CO_2 present, and it is highly probable that it is quantitatively dissipated during the two-hour oxidation period.

Experiments run in this laboratory several years ago showed that a continually renewed atmosphere of pure CO_2 at 760 mm. pressure above the surface of the oxidation mixture for a period of 2 hours reduced the value for a known glycerol content (97.82 per cent) by only 0.62 per cent. Since 1938 several thousand glycerol determinations have been run with complete satisfaction as to accuracy using the above described procedure.

LITERATURE CITED

(1) Official and tentative methods of the American Oil Chemists' Society, p. D-6 (1941).

Abstracts

Oils and Fats

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VEGETABLE OILS THAT U. S. NEEDS FROM AMERICAN TROPICS. K. S. Markley. *Oil, Paint & Drug 7*, 45 (1942).

THE PROBLEM OF RELIEVING THE FAT DEFICIENCY IN ITALY. F. Wittka. *Allgem. Oel- u. Fett-Ztg. 38*, 7-10 (1941). About one-third of the fat consumed in Italy was imported in the form of seeds. This deficiency can be overcome by planting better quality seeds, improving cultivation and increasing the amt. of peanuts planted. The climate is unsuitable for production of soybeans.

COMPLETE NEUTRALIZATION OF FATS AND OIL. Ludvik Spirk. *Chem. Listy 35*, 45 (1941). For the production of neutral fats and oils rapid removal