

$$\frac{0.8340 - 0.2327}{48.24} = 0.0124 \text{ cc. of dissolved and peroxide oxygen/cc. ether}$$

Peroxide Oxygen by first method in this paper = 0.0030 cc./cc. ether

Dissolved Oxygen = 0.0094 cc./cc. ether

CONCLUSIONS.

1. Quantitative methods have been developed for determining active (peroxide) and molecular (dissolved) oxygen in ether.
2. A relation between this quantitative peroxide test and the U. S. P. qualitative test for peroxides has been determined.
3. The nature of the precipitate formed in the U. S. P. test for peroxides on ethers having developed peroxides is discussed.

RESEARCH DEPT. OF THE CHEMICAL & PHARMACEUTICAL LABORATORIES,
E. R. SQUIBB & SONS, BROOKLYN, NEW YORK.

A FURTHER STUDY OF THE INCOMPATIBILITY BETWEEN SODIUM SALICYLATE AND SODIUM BICARBONATE.*

BY JOHN C. KRANTZ, JR., AND C. JELLEFF CARR.

INTRODUCTION.

In a previous communication to THIS JOURNAL one of the authors¹ in a study of the incompatibility between sodium salicylate and sodium bicarbonate in aqueous solution, showed this particular darkening phenomenon to be peculiar to the sodium salt of ortho hydroxy benzoic acid in the presence of alkali bicarbonates. Since the publication of this work, the investigation of certain English workers² along this line has come to our attention. It was claimed by these investigators that the discoloration was due to an impurity in the sodium salicylate.

To determine whether or not this change was inherent to salicylic acid or due to some impurity present and to study the influence of concentration upon the rate of discoloration are the purposes of this investigation.

EXPERIMENTAL.

Influence of Impurity.—A sample of salicylic acid obtained from oil of wintergreen and recrystallized was secured. This product was again recrystallized from hot water. A sample of this acid was converted into sodium salicylate and 60 cc. of a solution prepared containing 2 Gm. each of sodium salicylate and chemically pure sodium bicarbonate.

This solution was stored in flint glass, in a partially filled flask in diffused daylight.

Within three days, slight signs of discoloring were visible, within seven days the solution was dark brown and finally became black as did those samples previously described by one of the authors.

* Section on Practical Pharmacy and Dispensing, A. PH. A., Rapid City meeting, 1929.

¹ J. C. Krantz Jr., JOUR. A. PH. A., 17 (1928), 1204.

² Anon., Chem. & Drug., 104 (1926), 506; through A. PH. A. YEAR BOOK, 15 (1926), 74.

TABLE I.

No.	CONC. SODIUM SALICYLATE. Molar.	Gm. in 200 cc.	CONC. SODIUM BICARBONATE. Molar.	Gm. in 200 cc.	No. of days when discoloration appeared.
1	0.172	5.524	1.00	16.80	5 dark brown
2	0.172	5.524	0.50	8.40	9 dark brown
3	0.172	5.524	0.10	1.68	13 dark brown
4	0.172	5.524	0.01	0.168	30 light brown
5	0.172	5.524	0.001	0.0168	46 very light brown
1	0.344	11.05	0.2	3.36	10 dark brown
2	0.172	5.524	0.2	3.36	14 dark brown
3	0.086	2.762	0.2	3.36	35 dark brown
4	0.0086	0.276	0.2	3.36	35 light brown
5	0.00086	0.028	0.2	3.36	46 no discoloration

Influence of Concentration.—In order to study the influence of concentration upon the rapidity of darkening in this mixture, two series of solutions were prepared. One in which the concentrations of sodium salicylate were kept constant and the concentrations of sodium bicarbonate varied and another in which the concentrations of sodium bicarbonate were kept constant and the concentrations of sodium salicylate varied.

Table I records the observations made upon these solutions stored in partially filled flint flasks in diffused daylight.

The results included in Table I indicate that the rapidity of color change is a function the concentration of either the sodium salicylate or the sodium bicarbonate. The greater the concentration of either, the more rapid will be the change in color.

An analysis of several samples during the formation of and presence of a deep black color indicated that the loss of salicylic acid by this color change is insignificant.

CONCLUSIONS.

1. Purified natural sodium salicylate darkens in aqueous solution in the presence of sodium bicarbonate.

2. The rapidity of the occurrence of the darkening phenomenon is a function of the concentration of either the sodium salicylate or the sodium bicarbonate.

PHARMACEUTICAL RESEARCH LABORATORY,
SHARP AND DOHME, BALTIMORE, MARYLAND.

ABSTRACTS OF SCIENTIFIC PAPERS, 1929.

"The Therapeutic Activity of Neoarsphenamine," by Alfred E. Jurist and W. G. Christiansen.

Some studies on the toxicity and therapeutic index of Neoarsphenamine are presented showing the wide range of variation in this product and the existence of at least one product with a therapeutic index closely

approaching that of arsphenamine. Some discussion of the relation between the chemical, physical and colloidal characteristics and therapeutic index of Neoarsphenamine is presented.

"Food as a Preventive Medicine," by E. A. Ruddiman.

Discussion importance properly balanced diet of proteins and carbohydrates. Effect dietary content of vitamins mentioned, also importance of certain minerals.