LARD FROM OILY HOGS.

By W. D. Richardson and F. O. Farey.

Received May 14, 1908.

In a previous communication[1] one of us called attention to some of the physical and chemical characteristics of lard derived from animals known to packers as "oily" hogs. This lard is so different in its characteristics from ordinary lard that it could not possibly be identified by analysis by a person ignorant of its source. It is more like lard oil than lard and in many respects resembles the fat derived from the wild boar.

A drove of these hogs was recently received from Arkansas at the Union Stock Yards, Chicago, and several pieces of the fat were analyzed with the following results:

Table I.—Analyses of Lard from Oily Hogs.

Source of fat.	"Titer."	Melting point. Open capillary. Lower limit.	Melting point. Closed capillary. Upper limit completely clear.	Refractive index. Fatty acids. 60°.	Refractive index. Fat. 60°.	Refractive index. Fat. 40°.
Back fat.....	21.2	—1.5	12.0	1.4452	1.4541	1.4620
Leaf lard....	21.6	—1.6	17.0	1.4452	1.4540	1.4620
Leaf lard....	23.8	—0.8	22.0	1.4453	1.4542	1.4621
Leaf lard....	23.4	+0.9	21.0	1.4448	1.4542	1.4621
Ham fat.....	21.8	0.0	18.0	1.4450	1.4540	1.4620
Ham fat.....	19.3	—2.4	13.0	1.4455	1.4560	1.4640

Source of fat.	Free acid (as oleic). Per cent.	Köttstorfer. number.	Iodine number (Hanus).	Iodine number. Liquid. Fatty acids (Hanus).	Liquid Fatty acids. Per cent. (basis of fat).	Liquid. Fatty acids. Per cent. (basis of acids).	Bromides. Insoluble in petroleum ether at 8° C. Per cent.
Back fat.....	0.16	189.0	93.9	104.5	84.4	89.4	..
Leaf lard....	0.16	191.0	95.2	106.8	84.2	89.2	..
Leaf lard....	0.26	192.5	92.6	110.0	81.5	86.3	..
Leaf lard....	0.14	190.5	93.8	106.9	82.9	87.8	..
Ham fat.....	0.20	189.0	92.8	108.3	82.2	87.1	1.51
Ham fat.....	0.16	190.5	95.1	109.7	81.1	85.9	..

The figures are interesting as showing the possible deviations to which an animal fat may be subject under different (not necessarily abnormal) life habits of the animal, the most influential of the determining factors being, apparently, the foods and habits. The fat in question is not derived from any particular breed of hogs so far as we can ascertain. As a rule, however, the animals which yield it can be distinguished by the expert on account of their physical appearance. But in the present instance this was not possible, as the animals appeared to be of the usual type.

In attempting to isolate bromides insoluble in petroleum ether from these lards a precipitate was always obtained on adding bromine to the gasoline solution of the fatty acids. When, however, this precipitate was

[1] This Journal, 26, 372 (1904).

filtered off and an attempt made to dry it, even at as low a temperature as 40° C., or at room temperature for some time, it became brown and resinous. Purification by recrystallization was resorted to with no better results, inasmuch as the purified substance always turned brown and gummy. The melting point could not be determined for the same reason. No difficulty was experienced in obtaining good crystals of sharp melting point from cottonseed oil (tetrabromlinolic acid) in a parallel experiment.

It is known that cottonseed meal when fed to hogs affects the lard (melting point, titer) and such lard also responds to the Halphen test. In the case of the six samples which we investigated, a negative result was obtained when the Halphen test was applied.

LABORATORY OF SWIFT AND COMPANY, CHICAGO.

NOTES.

Preparation of a Solution for Making Standard Solutions of Sodium Hydroxide.—Prepare an approximately 50 per cent. solution of sodium hydroxide by dissolving 50 grams of ordinary C. P. caustic soda sticks in 50 cc. of distilled water and leave tightly stoppered over night. The major portion of the impurities is insoluble in such a concentrated solution. The next day the proper amount of the clear supernatant solution is weighed or measured out, as most convenient, and diluted to the mark with freshly boiled, distilled water. Theoretically 8 grams or 5.25 cc. are required per liter of $N/10$ solution but, owing to the impurities which have settled out, it is safer to use 8.5 grams or 5.75 cc. per liter and then standardize against $N/10$ acid.

With such a standard solution, made up as directed and kept in an automatic burette with a potash bulb to purify the air that enters the apparatus, the strength is maintained indefinitely, while one drop of $N/10$ H_2SO_4 is more than sufficient to render 25 cc. of the solution, already neutralized to phenolphthalein, acid to methyl orange, showing that it is practically completely free from carbonates, etc. In proof of this, barium hydroxide gives no precipitate when added to 25 cc. of the solution. The remainder of the strong caustic soda solution, if kept tightly stoppered, will furnish material for the preparation of future supplies when needed.

52 S. GARFIELD AVE., HINSDALE, ILL. H. W. COWLES, JR.

The Action of Hydrochloric Acid on Manganese Dioxide.—In a preliminary paper[1] by one of the authors, some of the products formed by the interaction of hydrogen chloride and manganese dioxide in non-aqueous solutions were described. Since that time a further investigation of this subject has been carried on. The work confirms the existence of manga-

[1] THIS JOURNAL, 29, 1277 (1907).