

THE OIL OF THE WILD GRAPE SEED, VITIS RIPARIA¹

By GEO. D. BEAL AND C. K. BEEBE

This oil has been examined in a series of studies which the senior author has been carrying out on the oils of the different members of the grape family. The source of the oil was the seeds from the wild grape, obtained during the manufacture of grape butter. The seeds, after freeing them from the dried pulp, were ground in a mill and extracted with low boiling petroleum ether; after evaporation of the ether, the oil obtained amounted to 19.38 per cent of the weight of seed taken. The oil had a greenish amber tint, tasted like castor oil, and had a peculiar acrid odor.

Physical and chemical examination of the oil gave the following data:

Density at 15° C.	Refractive index at 15° C.	Saponification value	Iodine value	Acetyl value	Insoluble Per cent	Fatty acids neutralization value
0.9425	1.4781	187.8	76.47	61.29	90.00	173.4
Mean						
TOTAL FATTY ACIDS		Per cent	Iodine value	molecular weight		
Liquid.....		95.00	91.8			
Solid.....		5.01	3.12	268.6		

The low iodine value of the solid fatty acids may be assumed to be caused by the trace of liquid fatty acids which it is impossible to remove by the lead salt-ether method of separation. On the basis of the neutralization value of these solid acids and their calculated molecular weight, we have calculated that these were a mixture of 64.28 per cent of palmitic acid and 35.72 per cent of stearic acid.

The iodine values obtained for the liquid fatty acids are too low, and were probably due to oxidation during the process of separation. Another portion of the oil was treated for the removal of the liquid acids, these were brominated, and the linolic and ricinoleic bromides separated by fractional crystallization from petroleum ether. The bromides obtained by this method corresponded to approximately 44 per cent of oleic and ricinoleic acids, and 56 per cent of linoleic acid.

The quantity of oil available at the time was too small for further studies on its composition, or for any determinations of its physiological properties. We hope during the present year to obtain a further supply of the oil, and to continue the investigation.

The saponification value, iodine value, acetyl value and nature of the fatty acids all tend to place this oil in the group with the other oils of the grape family and with castor oil, with which the group is headed. We have hopes that it will present, though doubtless to a much less degree, the physiological properties of castor oil.

LABORATORY OF ORGANIC ANALYSIS
UNIVERSITY OF ILLINOIS, URBANA

THE STABILITY OF NITROGLYCERIN TABLETS¹

By WILBUR L. SCOVILLE

Tablets of nitroglycerin for medicinal use, are manufactured from a 10 to 20 per cent alcoholic

¹ Presented at the 50th Meeting of the American Chemical Society, New Orleans, March 31 to April 3, 1915.

solution, or from a 20 per cent paste mixture containing sugar of milk or calcium carbonate. The body of the tablet is usually either sugar of milk or a mixture of this with cane sugar.

Since the tablets contain but a minute quantity of nitroglycerin ($1/200$ grain to $1/20$ grain each), yet are quite powerful in action, it is necessary that the strength shall be accurately adjusted, and that the tablets shall not change in strength on keeping.

It has been found that there is a decided loss of strength in manufacturing, and this loss is now allowed for, the final adjustment being made by assay on a preliminary sample of tablets. The ratio of loss is not constant, and it is necessary to test each lot during the process of manufacture. This is a matter of detail which is easily adjusted, and tablets of nitroglycerin need not vary materially from the stated strength when first made. The question of permanence, however, has not yet been decided.

Until within four years a trustworthy method of estimating the minute quantity of nitroglycerin in tablets was not known. And the question of deterioration can only be settled by starting with tablets whose strength has been accurately determined.

About $3\frac{1}{2}$ years ago a series of sample tablets, freshly made and tested, was set aside for observation. These represented the usual market, and were stored, some in bottles of amber glass, some in white, some in bottles well filled and some partially filled, so that the varying conditions of light and air might be considered in the keeping qualities of the tablets. Table I shows the results.

TABLE I—TESTS OF TABLETS OF NITROGLYCERIN

No.	CLASS	Strength Grain	Material	Date of manufacture	TEST—PERCENTAGES			
					When made	Jan. 1912	June 1912	June 1914
1	Triturate	$1/20$	Paste	Sept. 1911	95	95	95	95
2	Triturate	$1/25$	Paste	Feb. 1911	80	80	...	80
3	Triturate	$1/25$	Paste	May 1911	100	100	100	100
4	Triturate	$1/25$	Paste	Nov. 1911	100	...	100	100
5	Triturate	$1/50$	Paste	Sept. 1911	95	95	95	95
6	Triturate	$1/50$	Paste	Dec. 1911	100	...	100	100
7	Hypodermic	$1/50$	Solution	Sept. 1913	100	...	...	85
8	Hypodermic	$1/60$	Solution	Dec. 1913	100	...	...	80
9	Triturate	$1/100$	Paste	May 1910	95	95	95	90
10	Triturate	$1/100$	Paste	June 1911	100	100	100	100
11	Triturate	$1/100$	Paste	Oct. 1911	105	105	105	105
12	Triturate	$1/100$	Solution	Dec. 1912	105	...	...	90
13	Hypodermic	$1/100$	Solution	Dec. 1910	100	80	...	80
14	Hypodermic	$1/100$	Solution	Dec. 1910	100	50	40	35
15	Hypodermic	$1/100$	Solution	Sept. 1911	105	...	...	70
16	Hypodermic	$1/100$	Solution	Feb. 1912	105	...	100	85
17	Triturate	$1/150$	Paste	Oct. 1911	100	95	85	50
18	Triturate	$1/150$	Paste	Oct. 1911	100	100	80	50
19	Hypodermic	$1/150$	Solution	Sept. 1913	100	...	...	55
20	Triturate	$1/200$	Paste	Dec. 1911	100	...	65	60
21	Triturate	$1/200$	Solution	Nov. 1913	100	...	...	90
22	Hypodermic	$1/200$	Solution	Nov. 1912	100	...	...	80

It will be noticed that *all tablets containing less than $1/100$ grain each have deteriorated*, and, also, *all those made from solution of nitroglycerin, while tablets made from the paste, of $1/100$ grain or over, have maintained their strength*. Two explanations of this are possible:

(1) The solution may yield a finer attenuation of the nitroglycerin, exposing more surface and favoring volatilization. The chemists at the Bureau of Mines hold to the idea that nitroglycerin is slightly volatile at ordinary temperatures, and this view is largely accepted. The deterioration of the tablets containing less than $1/100$ grain each bears out this view, since in such tablets the nitroglycerin must be more highly attenuated than in the stronger, to secure