tually occurs. Magnesium chloride antagonizes strychnine in direct proportion to the concentration of the salt used, from the ratios $^1/_{10}$ to $^1/_2$ tested. Sodium chloride has an action dependent upon the concentration. There is apparently no consistency because $^1/_2$ and 5 × both slow the T/D, while 1 × and 2 × both speed the T/D. This is probably due to action on osmosis.

Powdered yellow dextrin had slight influence on strychnine action up to a ratio of 7.5 and 10.0 × the strychnine. At these figures there was a slight slowing of the strychnine speed of kill. In these tests brucine did not appear to exert a potentiating influence on strychnine, probably owing to a non-toxic brucine being involved.

CONCLUSIONS.

1. Strychnine alkaloids of apparently uniform chemical composition vary in their physiological activity.

2. Certain chemicals markedly influence the lethal rates of strychnine.

3. Sodium azide and sodium nitrite are most effective in speeding up the toxic action of strychnine.

4. Tannic acid, ethyl alcohol and activated calcium were the most effective in retarding the toxic action of strychnine.

5. Other substances tested were intermediate in their action, and did not greatly affect the toxicity of the poison.

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ASSAY OF FREE ACIDITY IN SHAVING CREAM.*

BY L. F. GABEL.[1]

The assay of free acidity or alkalinity in shaving cream is complicated by the fact that, in order to determine the reaction, it is necessary to use alcohol as a solvent.

Reaction in alcohol introduces a chemistry which differs from the reaction in water; this is particularly true of soap, due to the hydrolysis in water solution.

A series of assays was made in an attempt to note the reaction of soap by

(1) Colorimetric p_H
(2) Electrometric p_H
(3) Assay in 95% neutral alcohol
(4) Assay in small volume of water

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The following conditions were maintained in shaving cream:

Numbered samples, as designated in the following tables, refer to the same lots of cream throughout. All samples were heated to boiling and titrated immediately. Reagents: Alcoholic solution of Brom Thymol Blue; Phenolphthalein; $N/20$ alcoholic Potassium Hydroxide; neutral alcohol. It is necessary to free the alcohol of carbon dioxide to obtain neutral alcohol. This requires continued heating on the steam-bath, covering the beaker containing the alcohol with a watch glass, or using a reflux arrangement.

TABLE I.—COMPARISON OF THE REACTION OF SOAP WITH COLORIMETRIC AND ELECTROMETRIC p_H DETERMINATIONS.

Samples. 2 Gm. of Soap in 50 Cc. of 95% Neutral Alcohol.	p_H. Hellige Comparator (1 Cc. Brom Thymol Blue).	p_H. Potentiometer Glass Electrode.
No. 1	6.5	7.9
2	6.5	7.9
3	6.6	8.6
4	6.7	8.4
5	6.4	8.3
6	6.7	8.5
7	6.3	7.9
8	6.2	7.9

The colorimetric results show an acid reaction; the electrometric readings indicate an alkaline reaction. The electrometric p_H can be disregarded, as the high percentage of potassium and sodium ions present in the soap solution does not permit a true determination of the p_H.

TABLE II.—COMPARISON OF COLORIMETRIC p_H WITH THE ASSAY OF THE SOAP.

Samples. 2 Gm. of Soap in 50 Cc. 95% Neutral Alcohol.	p_H. Hellige Comparator (1 Cc. Brom Thymol Blue).	Assay. Titration with $N/20$ Alc. KOH (1 Cc. Brom Thymol Blue) % Excess Stearic Acid.	p_H. After Neutralization.
No. 1	6.5	2.9	7.0
2	6.5	2.8	7.1
3	6.6	2.3	7.1
4	6.7	2.5	7.0
5	6.4	2.8	6.9
6	6.7	3.0	7.1
7	6.3	3.3	7.0
8	6.2	3.1	7.0

The above results show a similarity of the p_H by colorimetric method and per cent excess stearic acid by neutralization with $N/20$ alcoholic KOH.

TABLE III.—COMPARISON OF THE REACTION OF SHAVING CREAM, USING BROM THYMOL BLUE INDICATOR AND PHENOLPHTHALEIN T.S.

Samples. 2 Gm. of Soap in 50 Cc. 95% Neutral Alcohol.	Assay. Titration with $N/20$ Alc. KOH (1 Cc. Brom Thymol Blue) % Excess Stearic Acid.	Assay. Titration with $N/20$ Alc. KOH (0.6 Cc. Phenolphthalein T.S.) % Excess Stearic Acid.
No. 1	2.9	3.3
2	2.8	3.0
3	2.3	2.8
4	2.5	2.3
5	2.8	3.5
6	3.0	3.2
7	3.3	3.4
8	3.1	3.5

The per cent of excess stearic acid in Shaving Cream, as determined by the phenolphthalein end-point, averages 0.2% higher than with Brom Thymol Blue. Higher results would be expected with phenolphthalein, as the color of this indicator does not appear until a p_H of 8.0 is reached.

The following results show the reaction of soap in a small volume of water:

TABLE IV.

Samples. 2 Gm. of Soap in 2 Cc. Water (Heated to Boiling).	Assay with $N/20$ Alc. KOH (1/2 Cc. Brom Thymol Blue) % Excess Stearic Acid.	Assay with $N/20$ Alc. KOH (1/2 Cc. Phenolphthalein T.S.) % Excess Stearic Acid.
No. 1	3.4	3.3
2	3.0	3.2
3	3.0	3.0
4	2.8	2.8
5	3.1	3.2
6	2.9	3.2
7	3.3	3.4
8	3.7	3.6

Upon adding phenolphthalein to a mixture of 2 Gm. of soap and 2 cc. water before heating, a decided alkaline reaction indicates the extent of the hydrolysis of the soap. After heating until solution takes place, the reaction is acid, requiring approximately 6 cc. of $N/20$ alc. KOH to neutralize.

The above experiment shows the necessity of maintaining a hot solution throughout the assay.

CONCLUSIONS.

A series of assays for determination of free acidity in Shaving Cream was made with the object of checking the method generally used, as well as attempting to find a more accurate procedure.

Results obtained with Brom Thymol Blue used as indicator averaged approximately 0.2% lower acidity than the phenolphthalein end-point.

As the red color of phenolphthalein in the presence of an alkali does not appear until a p_H of 8.0 is reached, it is reasonable to assume that results with Brom Thymol Blue are more accurate.

Detection of the neutralization point was more readily observed with Brom Thymol Blue than with phenolphthalein indicator.

It would be highly desirable if a definite procedure was established for the assay of the reaction of soap.

The factors to be considered are: Amount of sample; volume of solution; use of neutral alcohol, free from carbon dioxide; temperature of solution during the assay; indicator.

The *Indian and Eastern Druggist* states that immense quantities of licorice are grown on the banks of the Tigris from Mosul to Kut, and on the Euphrates from Meskene (opposite Aleppo) to Diwaniyah. Exports have reached 6000 or 7000 tons per annum. The root is dug in the winter months, dried and sent down to Basrah to be baled. Before the war the annual exports of gum were some 6000 cases, the most valuable are the gum tragacanths, which are produced by tapping small shrubs which grow all over the mountains of Southern Persia, and in Iraq in the regions of the north and north-east frontiers. Mosul and Sulaimaniyak are the principal collecting areas. The gum is brought to Baghdad, where it is sorted and packed for export. Another kind of gum is produced from a large tree (known as Button by the Arabs) which grows on the borders of Kurdistan. The tree produces edible fruits from which oil is extracted in Mosul and Baghdad. This gum is known as "Elch," and is principally sent by caravan to Aleppo, where it is used for sizing cloth.