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MEAT PRESERVATIVES

Thesis for the Degree of B. S.

Irma G. Thompson

1900

-THESIS-

on

-Meat Preservation-

by

Irma G. Thompson.

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THESIS

These materials are prepared in the form of rather coarse powders, and their use, as the name implies, is for the preservation of all kinds of meats, but principally such meats as sausage, Hamburg, pressed loaf, and corned beef. The application of these various powders tends to prevent the formation of germs of decomposition, and also to give the meats a good color. There are as many varieties of preservatives as there are manufacturers, and then of each variety there are any number of grades. The active principles which are found in most of them are:- common salt, borax, salt-petre, and in some cases salicylic acid, while the red coloring matter is red aniline dye. In one sample, the XXXX Preservative, analyzed some time before, I found the active principle to be sulfite of sodium mixed with a little fine salt.

The question as to whether these materials are injurious to the health or not, is one of great commercial interest. It is true that only small quantities are used at one time, and that doubtless no one has ever been made seriously ill from eating preserved meats; but there is always the feeling against taking into the system any food that has been "doctored." While rosaniline may be made a perfectly pure dye, and free from mineral poisons, nevertheless it is poisonous if taken in large quantities, and its use in any degree seems highly questionable. Salt-petre and borax are often used for preservatives and are probably not especially injurious to the health. Salicylic acid is a vegetable product, found in the blossom of the Spirea and in the wintergreen, and

by certain chemical processes it can also be obtained from phenol. It is used as an antiseptic to arrest fermentation, and is also used to preserve fruits, but scientists agree that it is very poisonous, and retards digestion.

The following are the qualitative and quantitative analyses of seven different grades of meat preservalines.

"A" Peerless."

Common salt, NaCl	61.425%
Salt-petre, KNO_3	14.140
Borax - anhydrous, $\text{Na}_2\text{B}_4\text{O}_7$	5.083
Salicylic acid, $\text{C}_6\text{H}_4\text{OHCOOH}$.720
Moisture	<u>11.175</u>
Total -	92.543%

Remarks:-

From various qualitative and quantitative tests I judge the remainder (7.457%) to be composed of water held in chemical combination and perhaps some unknown organic material. I also found a trace of Sulfuric acid (H_2SO_4), but not enough to determine. This material is a white coarse powder, and is used for general purposes of preserving, for different kinds of meat. It is manufactured by the Chicago Casing Co.

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Red Konservierung's Salze.

Common salt, NaCl	23.40%
Salt-petre, KNO ₃	34.34%
Borax - anhydrous, Na ₂ B ₄ O ₇	25.84
Moisture	<u>15.18</u>
Total -	98.76%

Remarks:-

From qualitative and quantitative experiments I believe the remainder (1.24%) to be water of chemical combination, and organic matter. This material is a rather fine powder, of a pale pink color, and is used more especially for corned beef. It is manufactured by Heller's Meat Preservative Co., Chicago, Ill.

Rosaline.

Common salt, NaCl	36.5625%
Salt-petre, KNO ₃	21.2100
Borax - anhydrous, Na ₂ B ₄ O ₇	13.5072
Moisture	<u>7.8200</u>
Total -	79.0997

Remarks:-

The remainder (20.9003%) is water of chemical combination and organic coloring matter. This substance is a gritty coarse powder of a deep red color, and is used for general preservative purposes, but more especially to give a rich red color to the meats. By use of the Soxhlet Extraction apparatus the coloring matter was dissolved in alcohol and the solution compared with a solution of red Diamond Dye, by means of a spectroscope, and by dyeing clean white wool with the different solu-

tions. From the comparative study of the solutions I found the coloring matter of Rosaline to correspond very closely to the "Fast Scarlet" Diamond Dye, manufactured by Wells, Richardson & Co., London, England. The material Rosaline itself is put up by Heller's Meat Preservative Co., Chicago, Ill.

"B" Grade.

Common Salt, NaCl	64.35%
Salt-petre, KNO ₃	9.59
Borax - anhydrous, Na ₂ B ₄ O ₇	13.42
Moisture	<u>4.65</u>
Total -	92.01%

Remarks:-

The remainder (7.99%) is doubtless water of chemical combination and organic coloring matter. The material is a coarse pinkish-red powder, and is used for ordinary preserving purposes in the meat markets.

"B" for bologna.

Common salt, NaCl	36.5625%
Salt-petre, KNO ₃	28.2500
Borax - anhydrous, Na ₂ B ₄ O ₇	18.8700
Moisture	<u>7.2250</u>
Total -	90.9075%

Remarks:-

The remainder (9.0925%) is probably water of chemical combination and organic coloring matter. This substance is also a coarse

pinkish-red powder, used for general preserving purposes. It is put up by the Chicago Preservaline Co.

"C" Grade.

Common Salt, NaCl	42.41%
Salt-petre, KNO_3	30.30
Borax - anhydrous, $\text{Na}_2\text{B}_4\text{O}_7$	13.34
Moisture	<u>6.00</u>
Total -	92.05%

Remarks:-

The remainder (7.95%) is probably water of chemical combination and organic coloring matter. This substance resembles "B" grade in color and general use but it is an inferior grade of the same kind of preservaline.

"C" for corned beef.

Common salt, NaCl	49.72%
Salt-petre, KNO_3	28.28
Borax - anhydrous, $\text{Na}_2\text{B}_4\text{O}_7$	20.70
Moisture	<u>4.87</u>
Total -	103.57%

Remarks:-

The amount over run is owing to experimental errors. This substance is a white coarse powder, used more especially for corned beef. It is manufactured by the Chicago Preservaline Co.

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