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TREATMENT OF GLUE AND GELATIN

Edward F. Christopher, Chicago, Ill., assignor to Industrial Patents Corporation, Chicago, Ill., a corporation of Delaware

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This invention relates to a method of extracting gelatinous material from gelatinous material stock such as hide trimmings, fleshings, sinews and the like.

One of the objects of this invention is to provide a method of treating gelatinous material stock to yield a higher test gelatinous material.

Another object of this invention is to provide a method of curing gelatinous material stock such as hide trimmings, fleshings, sinews and the like to shorten the curing period.

Further objects and advantages will be apparent from the description and claims which follow.

The present invention contemplates the treatment of gelatinous material stock with a dilute alkaline solution containing a small amount of a water soluble soap.

The term "gelatinous material" is used herein and it is to be understood to designate all grades of animal gelatin and glue including those intermediate products commonly known as "low grade gelatin" and "high grade glue." The term "gelatinous material stock" is used herein and it is to be understood to designate animal waste matter such as hide trimmings, fleshings, sinews, snouts, lips, ears, and the like.

Examples of soluble soaps which may be employed in practicing my invention are the sodium and potassium soaps made from the fatty acids of common animal and vegetable fats and oils such as sodium and potassium oleates, laurates, stearates, palmitates and the like. For the purposes of the present invention, potassium cocoanut oil soap is one of the most convenient of the soluble soaps since it is liquid at normal temperatures and the free fatty acid appears to possess germicidal properties which are more pronounced than those of the other common fatty acids. This soap also appears to destroy certain enzymes which are present in the gelatinous material stock and which, if not destroyed or rendered inactive, adversely affect the properties of the gelatinous material extracted from the gelatinous material stock.

In the conventional practice of extracting gelatinous material from gelatinous material stock, the stock is cured in a lime bath. The curing period requires from four to twelve weeks, depending on the type of stock, the temperatures, and the amount of caustic which is generally employed to fortify the lime. The cured stock is then thoroughly washed and the pH adjusted by the addition of acid. The stock is then transferred to cooking vessels and the gelatinous material extracted with water. The resulting solution containing the gelatinous material is then concentrated, chilled, and dried in any conventional manner.

In curing gelatinous material stock, according to my invention the stock is soaked in a dilute alkaline solution containing a small amount of a water soluble soap for a short period. Caustic soda, caustic potash or ammonium hydroxide may be employed in preparing the alkaline solution. The stock is placed in a vat containing the dilute alkaline solution for several days, washed with water, and then transferred to the cooking vessels and the gelatinous material extracted with water. The hair which may be present on this type of stock may be readily removed in a clean condition after several days curing, whereas the conventional lime process does not permit a recovery of the hair.

In practicing my invention, I have found that I may employ alkali solutions of various concentrations, 0.25 normal to 1.5 normal solutions being quite satisfactory.

I have found that from 0.05 per cent to 2 per cent soap, based upon the weight of the stock treated, is generally satisfactory in the curing of gelatinous material stock. Greater proportions of soap may be employed, but are of no particular advantage in respect to either the curing period or the quality of the gelatinous material. The solubility of soaps in the alkaline solutions is quite low and no advantage is gained by having undissolved soap present. Hide trimmings, after being soaked in the alkaline solution containing small amounts of a soap may be dehaired after several days. The dehaired stock is then washed with water to remove soap and alkali which may adhere to the surface of the stock, and to remove any materials which may have been released during the curing period. The treatment with soap and alkali and subsequent washing effects a removal or precipitation of adulterants and diluents. These inert substances such as blood and certain albuminous materials, if not removed or precipitated, may be extracted along with the gelatinous material, thereby adversely affecting the quality of the gelatinous material.

The washed stock is then treated with acid to adjust the stock to the proper pH, after which the stock is transferred to open cooking kettles for the extraction of the gelatinous material. The gelatinous material may be extracted in any conventional manner, for example, by cooking in open kettles in successive steps, the temperature

in each step being increased. The resulting solution containing the gelatinous material is then concentrated, chilled and dried in any conventional manner.

I have found that an 0.4 normal caustic soda solution containing 0.25 per cent potassium cocoanut oil soap, the amount of soap being based on the weight of the stock, forms a satisfactory curing solution.

In a specific example, an 0.52 normal, about 2 per cent caustic soda solution was prepared and about 2 per cent potassium cocoanut oil soap, based upon the weight of the stock, was added to the caustic solution. A quantity of snouts, lips, and ears were then placed in the solution for a period of five days. At the end of the curing period the stock was washed with water and the gelatinous material extracted with water.

The jelly test of the extracted glue was about the same as the jelly test of glue prepared by the conventional four week lime cure. The viscosity of the extracted glue, however, was substantially higher than that of glue prepared by the lime cure.

It is to be understood that the concentration of the curing bath may be varied with respect to both the alkaline constituent and the soap constituent. The curing period may be varied to some extent by varying the concentration of the constituents of the curing bath and by varying the temperature. My process greatly reduces the time of curing and thereby reduces the large storage space and the large number of curing pits which are ordinarily necessary in the manufacture of gelatinous material from this type of stock. The curing period will vary with a fixed curing bath dependent upon the particular type of stock being treated.

The qualities of gelatinous material prepared from gelatinous material stock of the type mentioned above are superior to the qualities of gelatinous material prepared by conventional methods. It appears that the period of treatment and the severity of the treatment are reduced by following my invention, and thereby produce less degradation and chemical change in the gelatinous material than is usual in the conventional methods.

It is to be understood that the range of concentrations and the specific concentrations of the alkaline solutions set forth herein are preferred concentrations. The upper limit of concentration is dependent upon the particular type of stock to be cured. The concentration should not be so high that the stock becomes softened or broken down to such an extent as to prevent handling of the cured stock in the subsequent extraction of the gelatinous material.

I claim:

1. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a solution of an inorganic hydroxide of relatively high alkalinity containing a water soluble soap, separating the alkaline solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

2. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a dilute solution of an inorganic hydroxide of relatively high alkalinity containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock, separating the alkaline solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

3. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a dilute solution of caustic soda containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock, separating the solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

4. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a dilute solution of caustic soda containing a small amount of potassium cocoanut oil soap, the amount of soap being based upon the weight of the stock, separating the alkaline soap solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

5. The method of preparing gelatinous material from gelatinous material stock which comprises soaking the stock in an 0.25 normal to 1.5 normal caustic soda solution containing from 0.05 per cent to 2 per cent water soluble soap, the amount of soap being based upon the weight of the stock, separating the alkaline soap solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

6. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with an 0.5 normal caustic soda solution containing 2 per cent potassium cocoanut oil soap, the amount of soap being based upon the weight of the stock, separating the solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

7. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a dilute solution of caustic potash containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock, separating the solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

8. The method of preparing gelatinous material from gelatinous material stock which comprises treating the stock with a dilute solution of ammonium hydroxide containing a small amount of water soluble soap, the amount fo soap being based upon the weight of the stock, separating the solution from the stock, and thereafter extracting the gelatinous material from the treated stock.

9. The method of curing gelatinous material stock for the extraction of gelatinous material which comprises soaking the stock in a solution of an inorganic hydroxide of relatively high alkalinity containing a water soluble soap.

10. The method of curing gelatinous material stock for the extraction of gelatinous material which comprises soaking the stock in a dilute solution of an inorganic hydroxide of relatively high alkalinity containing from 0.05 per cent to 2 per cent of a water soluble soap, the amount of soap being based upon the weight of the stock.

11. The method of curing gelatinous material stock which comprises treating the stock with a dilute solution of caustic soda containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock.

12. The method of curing gelatinous material

stock which comprises treating the stock with a dilute solution of caustic soda containing from 0.05 per cent to 2 per cent of a water soluble soap, the amount of soap being based upon the weight of the stock.

13. The method of curing gelatinous material stock which comprises treating the stock with an 0.25 normal to 1.5 normal caustic soda solution containing from 0.05 per cent to 2 per cent potassium cocoanut oil soap, the weight of the soap being based upon the weight of the stock.

14. The method of curing gelatinous material stock which comprises treating the stock with an 0.5 normal caustic soda solution containing 2 per cent potassium cocoanut oil soap, the amount of soap being based upon the weight of the stock.

15. The method of curing gelatinous material stock which comprises treating the stock with a dilute solution of caustic potash containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock.

16. The method of curing gelatinous material stock which comprises treating the stock with a dilute solution of ammonium hydroxide containing a small amount of a water soluble soap, the amount of soap being based upon the weight of the stock.

EDWARD F. CHRISTOPHER.