

UNITED STATES PATENT OFFICE

2,602,039

CRUDE COAL TAR DERMATOLOGICAL COMPOSITIONS

Irving B. Wershaw, New York, N. Y., assignor to Dome Chemicals, Inc., New York, N. Y., a corporation of New York

No Drawing. Application May 24, 1950,
Serial No. 164,033

9 Claims. (Cl. 167—58)

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This invention relates to a crude coal tar composition suitable for dermatological uses.

Crude coal tar has been used extensively in the dermatological field (New England Journal of Medicine 228: 384-386, March 25, 1943; article by Frank C. Combes, M.D. in Industrial Medicine, July 1944). As heretofore used, notwithstanding the relatively small proportion of crude coal tar present in the composition applied to the skin, usually of the order of 2% by weight, the composition had a black messy appearance. Further, it stained articles of apparel, linens, bedclothing, etc. with which it came in contact, which stains were difficult to remove. These factors, particularly its messy appearance, have tended to discourage use of crude coal tar compositions for dermatological uses even though beneficial. Much research and development work has been devoted to this problem. To the best of my knowledge and belief, however, all attempts made prior to my invention to mask or change the color of the crude coal tar without detrimentally affecting its pharmacologic action have proved unsuccessful.

It is an object of this invention to provide a crude coal tar composition of cosmetically elegant appearance and in which the pharmacologic action of the coal tar is not detrimentally affected.

Other objects and advantages of this invention will be apparent from the following detailed description thereof.

By crude coal tar as used herein is meant the crude coal tar product obtained as a by-product in the distillation of coal (anthracite or bituminous) to produce combustible gas, which distillation may be carried out either at relatively high temperatures, for example, in by-product coke ovens or retorts, or at lower temperatures as in the so-called low temperature coal distillation procedures. The term crude coal tar as used herein does not include distillates, oil fractions or pitch residues obtained from crude coal tar. It does mean the heterogeneous mixture obtained as a by-product in the manufacture of combustible gas as hereinabove described. In the case of tars separated say in the collector mains or other parts of the by-product recovery equipment in which the tar is sprayed with an aqueous medium, the crude coal tar is dehydrated so that it contains little or no water. Crude coal tar of commerce, which is a dehydrated coal tar and contains substantially all of the light oils, middle oils, heavy oils, anthracene oils and pitch, is suitable. This tar is black in color and when mixed

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with starch, petrolatum or other carrier, as heretofore produced, has a disagreeable appearance; the color varies from a dirty grey or brown to an objectionable black.

I have made the surprising and commercially important discovery that by mixing with each part by weight of crude coal tar from 10 to 40 parts by weight of a wetting agent which has the property of dispersing the coal tar and from 1 to 15 parts by weight of finely divided titanium dioxide, a cosmetically elegant crude coal tar composition results in which none of the pharmacological properties of the coal tar are deleteriously affected. Furthermore, the resulting composition, surprisingly does not form objectionable stains on the skin, linens, bedclothes or other surfaces with which it may come in contact. The composition can readily be removed from such surfaces by simply washing them with water, if desired, with soap and water.

The composition hereinabove described may be packaged for storage or shipment in any suitable size package. When it is desired to apply same the composition is added to a suitable absorption, washable, dispersible carrier, such as a solid carrier consisting of a mixture of oils, waxes, emulsifiers, wetting agents and water, or a liquid carrier such as the mineral oils, e. g., liquid petrolatum. Examples of such solid carriers are the creams sold under the trade names "Omnia Creme," "Alcolan" and "Neobase." These carriers function to absorb the serous exudates and to spread the crude coal tar composition. The composition is added to the carrier in proportions to produce a mixture containing from about 1% to 5%, preferably 2% to 3% of crude coal tar based on the weight of the mixture.

Preferably, however, I mix the constituents in proportions to produce a composition which is ready for application. Thus per part of crude tar I add from 10 to 40, preferably 20 to 30, parts by weight of wetting agent, from 1 to 15, preferably 3 to 10, parts by weight of titanium dioxide, from 10 to 40, preferably, 15 to 20, parts by weight of absorbent filler for the serous exudates, such as starch, etc., and from 1 to 15, preferably 3 to 10, parts by weight of an astringent, such as zinc oxide. This mixture is added to a carrier which may be a solid carrier as described above, or liquid carrier, e. g., mineral oil to produce a mixture containing 2% crude coal tar.

As the wetting agent any agent capable of emulsifying the crude coal tar may be used. Among such agents may be mentioned the polyalkylene derivatives of partial esters of hexitol

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anhydride and long chain fatty acids, such as polyoxyalkylene sorbitan monolaurate sold under the trade name Tween 20, the corresponding palmitates (Tween 40), stearates (Tween 60), polyoxyalkylene ether of sorbitan monooleate, alkyl aryl sulfonates (Nacconols), sodium salts of sulfated higher fatty alcohols (Gardinol, Duponal), etc. The preferred wetting agent is Tween 20.

The state of subdivision of the titanium dioxide is not critical. A titanium dioxide in finely divided form such as that used for pigment purposes may be employed.

In making the composition of this invention the crude coal tar is first mixed with the wetting agent until a homogeneous dispersion results. Usually mixing for about 30 minutes suffices to produce a satisfactory dispersion. The titanium dioxide is then added and the mixing continued. Surprisingly, I have found the finely divided titanium dioxide becomes homogeneously distributed throughout the mixture resulting in a composition having a cosmetically elegant appearance and this without detrimentally affecting the pharmacological properties of the crude coal tar. Furthermore, the resultant mixture when applied can readily be washed off the skin, linens, bedclothing etc. with water or water and soap without leaving noticeable stains. This is indeed surprising in view of the complete immiscibility of crude coal tar with water.

The following example is illustrative of a composition embodying my invention. It will be understood the invention is not limited to this example. In this example parts are by weight:

	Parts
Crude coal tar -----	300
Tween 20 -----	3000
Titanium dioxide -----	450
Zinc oxide -----	850
Corn starch -----	4000
Liquid or solid absorbent base as herein- above described -----	6400

Since certain changes may be made in the above composition of matter and different embodiments of the invention could be made without departing from its scope, it is intended that all matter contained in the above description shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 10 to 40 parts by weight of a wetting agent and from 1 to 15 parts by weight of finely divided titanium dioxide.

2. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 10 to 40 parts by weight of a polyalkylene derivative of a partial ester of hexitol anhydride and from 1 to 15 parts by weight of finely divided titanium dioxide.

3. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 10 to 40 parts by weight of a polyalkylene derivative of a long chain fatty acid and from 1 to 15 parts by weight of finely divided titanium dioxide.

4. A crude coal tar composition suitable for dermatological uses containing per part of crude

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coal tar from 10 to 40 parts by weight of a polyoxyalkylene sorbitan monolaurate and from 1 to 15 parts by weight of finely divided titanium dioxide.

5. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 20 to 30 parts by weight of a polyoxyalkylene sorbitan monolaurate and from 3 to 10 parts by weight of finely divided titanium dioxide.

6. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 10 to 40 parts by weight of a wetting agent, from 1 to 15 parts by weight of finely divided titanium dioxide, from 10 to 40 parts by weight of absorbent filler, from 1 to 15 parts by weight of an astringent, and a carrier in amount sufficient to produce a mixture containing approximately 1% to 5% by weight of crude coal tar.

7. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 20 to 30 parts by weight of a polyalkylene derivative of a compound from the group consisting of the partial esters of hexitol anhydride and long chain fatty acids, from 3 to 10 parts by weight of finely divided titanium dioxide, from 15 to 30 parts by weight of starch, from 3 to 10 parts by weight of zinc oxide and sufficient absorbent carrier to produce a mixture containing approximately 1% to 5% by weight of crude coal tar.

8. A crude coal tar composition suitable for dermatological uses containing per part of crude coal tar from 20 to 30 parts by weight of polyoxyalkylene sorbitan monolaurate, from 3 to 10 parts by weight of finely divided titanium dioxide, from 15 to 30 parts by weight of starch, from 3 to 10 parts by weight of zinc oxide, and sufficient absorbent carrier to produce a mixture containing approximately 1% to 5% by weight of crude coal tar.

9. A crude coal tar composition suitable for dermatological uses containing about 300 parts by weight of crude coal tar, about 3000 parts by weight of polyoxyalkylene sorbitan monolaurate, about 450 parts by weight of finely divided titanium dioxide, about 850 parts by weight of zinc oxide, about 4000 parts by weight of starch, and about 6400 parts by weight of absorbent carrier.

IRVING B. WERSHAW.

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