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ALPHA-CELLULOSE POWDER COMPOSITIONS AND METHODS OF ABSORBING BODY FLUIDS FROM HUMAN SKIN

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This invention relates to an improved means for absorbing fluids from the skin with a minimum amount of irritation of intertrigenous portions of the skin.

The absorptive powders which are commonly referred to as "baby powders" in the trade are all based on formulations comprising a major proportion of talc. While talc does have some desirable properties when used as an absorptive powder, e.g., it possesses good slip, smoothness, and clings well to the skin, yet when it is wetted with water or with body fluids and allowed to dry it forms hard agglomerates which can be extremely irritating in the tender intertrigenous areas of the skin.

Because the absorptive powers of talc are not very good, cornstarch is frequently added to the talc base of baby powders. Starch, though not subject to as severe caking as talc, unfortunately does provide an excellent medium for bacterial growth, as a result of which degradation products can be potent primary irritants.

Boric acid is often added to starch-talc powders in order to inhibit the bacterial growth which is apt to otherwise take place in the composition; however, it is considered to be a dangerous material to use over large areas of infant skin and especially where maceration or denudation may exist.

Powdered maize cob, such as the product described in United States Patent No. 2,890,151, is an admirable absorptive powder which is far superior to talc, cornstarch, and similar components of commercial absorptive powders, however, it does have a tendency, when wetted, to stain clothing, diapers, undergarments, and the like, with which it comes in contact, and it has a slightly coarse feel due to the nature of the ground maize cob particles.

At the present time there is no commercially available powder which fully meets all of the requirements of a truly satisfactory baby powder, i.e., which possesses a high degree of absorbency, a lack of caking or crusting, an anti-friction effect, a bacteriostatic action, which is smooth and silky to the touch, does not stain when wetted with skin exudates and other body fluids, and which is characterized by an absence of primary irritants or of potentially dangerous additives.

The present invention provides a baby powder which does not stain, is highly absorbent, soft and smooth, is free of starch and boric acid and yet is completely non-caking and non-crusting. Furthermore, it has excellent smoothness and slip, and adheres well to the skin. It can soak up and retain many times its own weight of moisture, thus assisting in keeping intertrigenous areas of the skin dry while preventing moisture maceration, the latter being frequently the first breach in the skin's natural defenses. In a preferred form the baby powder of the present invention contains effective bacteriostatic and fungistatic agents.

One essential component of our improved baby powder is alpha-cellulose, preferably in the form of finely divided chemically purified wood cellulose fibers of high alpha-cellulose content. When bone dry the product is 99.5 percent plus pure cellulose. It consists of fibers which are, desirably, from about 15 to about 25 microns in diameter and in length average from about 35 to about 165 microns. One commercial form of such an alpha-cellulose product is known as "Solka-Floc," and is manufactured by the Brown Company, Boston 14, Mass.

While the above described finely divided chemically purified wood cellulose fibers are useful per se for removing body fluids from the skin, we prefer to include some talc as a component for the purpose of improving the slip and reducing bulking and budging when sifting from the can.

A typical formulation of a baby powder in accordance with our invention is set forth below:

Example I

	Percent
Talc	40
Microporous cellulose in the form of finely divided, chemically purified wood cellulose fibers of 15 to 25 microns in diameter and 35 to 165 microns in average length	53.88
Powdered maize cob, having a preferred particle size which ranges from that which will pass through a 100-mesh screen to that which will be first retained on a 400-mesh screen	5
Hexachlorophene	0.5
p-Chloro-m-xylenol	0.5
Perfume	0.12

The microporous cellulose components of the above composition soak up and retain many times their weight in moisture, thus assisting in keeping skin folds dry, preventing moisture maceration and agglomeration of the particles.

The superior absorptivity of the composition of the present invention was demonstrated on a side-by-side comparison basis against 14 of the most popular commercially available baby powders. In these tests a specially developed standardized procedure was used in which a weighed sample was mixed with an excess of water, filtered, and the water which was absorbed determined by difference. The data obtained appear below.

Powder:	Absorptivity (grams water per grams dry powder)
Powder A (The composition of Example I)	3.0
Powder B	1.0
Powder C	1.5
Powder D	1.0
Powder E	1.0
Powder F	1.2
Powder G	1.0
Powder H	1.1
Powder I	1.3
Powder J	1.5
Powder K	1.5
Powder L	1.4
Powder M	1.0
Powder N	1.0
Powder O	1.5

It is to be understood that finely divided alpha-cellulose can be used alone as a body fluid absorbent from the skin, although we have found it preferable to include powdered talc so as to improve the cling, smoothness, slip and flow properties of our powder. We also prefer to include bactericidal and fungicidal materials commonly used in baby powders, besides the ones specifically mentioned.

Obviously, many modifications and variations in the kind and amount of ingredients over and above the preferred form of the essential alpha-cellulose, namely finely-divided chemically purified wood cellulose fibers, as described above can be used, as those skilled in the art will recognize, and it is not intended, therefore, to limit the invention except as required by the appended claims.

We claim:

1. An improved method of absorbing body fluids from the human skin while minimizing irritation of intertrigenous areas of the skin comprising contacting the skin with a composition which consists essentially of alpha-cellulose in finely divided form.

2. A composition for absorbing body fluids from the human skin while minimizing irritation of intertrigenous areas of the skin which comprises an effective amount of substantially pure alpha-cellulose and talc.

3. An improved method of absorbing body fluids from the human skin which comprises contacting the skin with a composition containing an effective amount of finely divided fibers of essentially pure wood cellulose which are from about 15 to 25 microns in diameter and 35 to 165 microns in average length.

4. An improved method of absorbing body fluids from human skin while minimizing irritation of intertrigenous areas of the skin which comprises contacting the skin with a composition containing an effective amount of essentially pure alpha-cellulose in finely divided form.

5. A composition for absorbing body fluids from the human skin while minimizing irritation of intertrigenous areas of the skin which comprises an effective amount of microporous alpha-cellulose in the form of finely divided

essentially pure wood cellulose fibers of 15 to 25 microns in diameter and 35 to 165 microns in average length and powdered talc.

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