NOTES ON THE PHARMACEUTICAL METHOD OF CLARIFICATION.

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The general pharmaceutical procedure of clarification by the intervention of various absorptive media, involves a considerable diminution of the volume of the resultant filtrate. The extent of such deficiency is a specific factor of any particular absorptive material and is proportional to the quantity employed.

The retentive function exerted by an absorptive, with regards to particles of mechanical impurities (macroscopic) or dispersed colloidal matters in suspension, is not ordinarily subject to interference by the quantity of suspended particles in unit volume of the original liquid, when the process is conducted upon a limited scale.

Retention of suspended matter obviously continues, until the capillary activity of the porous media is retarded. The inverse ratio existing between the quantity of absorptive employed and the volume of filtrate obtained, can be reduced to "specific" proportions, based upon the percentage of solid required by a definite volume of a liquid subject to clarification.

Numerous experiments were conducted for the purpose of securing data, regarding the greatest possible volume of liquid susceptible to clarification, by a minimum of absorptive media. The data thus afforded and herein presented, can be utilized to material and economical advantage.

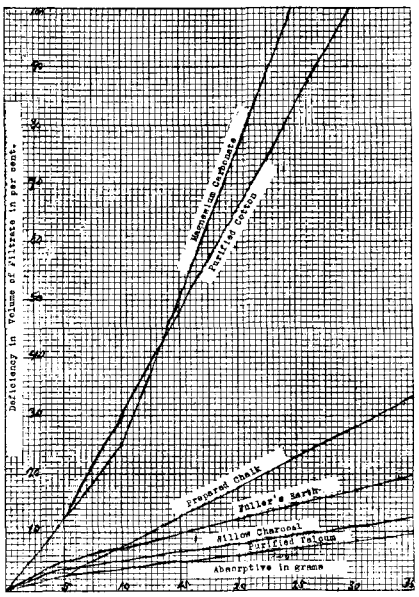
Absorptive.	Loss in volume. Absorption in grams. 5.	10.	Deficiency in volume. of filtrate in per cent. 5.	10.	200.0 cc H_2O employed for each test. Draining period five (5) minutes. Deductions allowed for accessory absorption by filter paper.
Magnesium Carbonate Refer to (1)	25.0	20.0	12.5	10.0	Insoluble in H_2O, but nevertheless it imparts alkaline reaction to liquid.
Fuller's Earth	10.0	15.0	5.0	7.5	Aluminum Silicate—$H_2Al_2Si_2O_8$ + H_2O may contain Fe as an impurity.
Willow Charcoal	7.5	10.0	3.75	5.0	Tendency to induce oxidation of organic substances in solution, decolorizes and simultaneously absorbs odors.
Prepared Chalk	5.0	15.0	2.5	7.5	Practically insoluble in H_2O, solubility increased by presence of NH_3 salts and particularly by CO_2.
Purified Talcum	5.0	7.5	2.5	3.75	Insoluble in H_2O. May contain Fe as an impurity.
Purified Cotton	25.0	60.0	12.5	30.0	Excessive absorption.
Filter Paper	Weight = 5.15 grams				10.0 cc loss in volume of filtrate.

(1) The figure in the 4th column was due to experimental error. The correct value is shown on graph.

CONCLUSIONS.

1. Consideration of the minimum loss in volume of a filtrate, sustained through the use of purified talc, and its insoluble siliceous character, renders this material

comparatively superior to all of the other absorptives examined. Talc in proportion of less than (1) per cent. of the volume of the liquid subject to clarification, has been found to yield excellent results.



2. The loss in volume of the filtrate is a trifle higher when calcium carbonate is employed instead of talc. The filtrate is entirely satisfactory. The practical utility of this absorptive is limited only to liquids of either an alkaline or neutral reaction. Owing to certain alkalies facilitating the solubility of calcium carbonate, its field is virtually restricted to neutral media.

3. Charcoal is applicable within a limited extent, as a clarifying agent, due to its principle property of decolorization and deodorization, it cannot be employed with impunity, in the treatment of aromatic commodities in the course of manufacture, *i. e.*: perfumes, toilet waters, or elegantly colored liquids in general.

4. Magnesium Carbonate produces a brilliant filtrate. Use restricted to neutral of alkaline liquids. Volume loss of filtrate extremely high.

The relative experimental losses of volume, incident to clarification were determined upon water, proceeding a uniform drainage period of five (5) minutes for each specimen of porous material subject to test. The mathematical functions of factorial variations applicable to the process when a liquid of definite concentration is concerned, become directly proportional to the specific density of the liquid.

A gravity factor below unity implies a negative equation while a liquid of density exceeding unity necessarily introduces positive increments of variation.

The accompanying graph illustrates the tabulated results combined with experimentally interpolated values to show the continuous superiority of the various absorptive media.

MANUFACTURE OF RENNET CASEIN.

In the Kaira district of Bombay Presidency lactic casein is made in large amounts from "separated" milk, and is exported to Europe. Rennet cascin is also in demand in Europe for the preparation of substitutes for celluloid, such as "galalith" and "erinoid." Investigations are now being made into the production of rennet casein from "separated" milk; vegetable rennets are being used, and the following have been tried: (1) Fruit of *Withania coagulans;* (2) juice of *Streblus asper;* (3) *Crotolaria burhia;* (4) *Leucas cephalotes.* Of these, the pulp of the immature fruit of *Withania coagulans* serves better than the others for clotting milk; the mature fruit of the same plant has no activity. The juice of *Streblus asper* is very active when fresh, but it loses its activity in course of time. The others were found to be inactive.—*Journ. Indian Ind. and Labour,* February, 1923, 95; through *Journal and Pharmacist.*