

# BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

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## ADSORPTION OF ALKALOIDS FROM THE NATIONAL FORMULARY ELIXIRS.\*

BY JOHN C. KRANTZ, JR.

In a paper read before this section at the Cleveland meeting, the writer proposed the use of silica gel as a filtering agent in several official preparations, where talc is now used. This suggestion caused adverse criticism by certain pharmacists who believed that silica gel would adsorb alkaloidal salts from preparations filtered through it and thus reduce the strength of the medicament. Judging from the classical work of Prof. J. U. Lloyd<sup>1</sup> on adhesion alkaloidal reactions, using a highly hydrated form of aluminum silicate, there seemed to be good ground for this criticism; not only might silica gel adsorb alkaloids, but probably talc also would be capable of producing some adsorption.

There are two National Formulary elixirs containing alkaloids in which talc is directed to be used as a filtering agent, one Elixir of Iron, Quinine and Strychnine, and another Elixir of Cinchona Alkaloids; in the first mentioned the directions do not suggest to set the preparation aside before filtering, but in the latter, the directions state to set the elixir aside for twelve hours, after mixing it with the talc, before filtering.

It is the purpose of this paper to show that neither silica gel nor talc adsorbs alkaloidal salts from either of these elixirs.

### EXPERIMENTAL.

A standard Elixir of Iron, Quinine and Strychnine was prepared, and without filtration was carefully made up to volume. Quantities of 50 cc each were shaken with silica gel, granulated and powdered talc in varying quantities for different periods of time and then filtered and the quantity of alkaloids present were estimated in the following manner.

Transfer 10 cc of the elixir, accurately measured, to a separator, dilute with 10 cc of water and make the mixture decidedly alkaline to litmus with ammonium hydroxide. Extract the alkaloids with three portions of chloroform (15, 10, 10 cc) and evaporate the combined chloroformic extractions to dryness on a water-bath. Dry the residue to constant weight at 110° C. and weigh as anhydrous alkaloids. The elixir contains in 10 cc amounts of quinine hydrochloride and strychnine sulphate corresponding to 0.07287 Gm. of free anhydrous alkaloids.

The following results are the average of two or more determinations for each sample:

Filtering agent used for 50 cc.	Length of time before filtering.	Grams of alkaloids found.
Not filtered		0.0757 Gm.
One gram silica gel	24 hours	0.0773 Gm.
One gram granulated talc	24 hours	0.0757 Gm.

\* Section on Practical Pharmacy and Dispensing, A. Ph. A., Asheville meeting, 1923.

<sup>1</sup> *Am. Journ. Pharm.*, May 1916, p. 217.