

The large number of experiments may be illustrated by four which will serve as examples, and for clarity the results may be tabulated as follows:

Experiment.	Drug.	Menstruum.	Process Percolation.	Alcohol, Per Cent.	Appearance.	Sediment.
1	A	Alcohol, 95%	A	82.0	Clear	Sl. Gran.
2	A	9 alcohol, 1 water	A	67.14, gelatinized when reduced	Brilliant	None
3	B	9 alcohol, 1 water	A	80.58, gelatinized when reduced	Clear	None
4	C	9 alcohol, 1 water	C	76.5	Clear	None

The authors are indebted to Mr. Glenn Williams and Mr. David McKay for valuable assistance in preparing a great number of batches of Fluidextract of Celery Fruit. Mr. John Taggart also rendered valuable service in determining the alcoholic content of the various products.

CONCLUSIONS.

If Fluidextract of Celery Fruit is to be prepared from a menstruum consisting of 95 per cent alcohol, it is not necessary to restrict the method of percolation as either process A or process C is satisfactory. In case it is desired to manufacture Fluidextract of Celery Fruit using a menstruum consisting of 9 parts alcohol and 1 part water as indicated in the N. F. VI, the two types of percolation should not be optional as process C gives a much more elegant pharmaceutical product than process A.

NOTES ON COMPRESSING GLAND PRODUCTS INTO TABLETS.*

BY F. D. STOLL¹ AND C. O. LEE.²

Last spring we were asked how to compress gland products into tablets. Not having given thought to the problem we set about to study it experimentally. We are, at this time, reporting formulas and procedures for making the following three glandular products into compressed tablets, desiccated heart substance, desiccated liver and desiccated pancreas.

COMPRESSED TABLETS OF DESICCATED HEART SUBSTANCE.

Formula.

Desiccated heart substance.....	85
Boric acid.....	6
White dextrin.....	4
Starch.....	2
Talcum.....	3
Simple elixir	
Alcohol	

* Section on Practical Pharmacy and Dispensing, A. Ph. A., Dallas meeting, 1936.

¹ Assistant Professor of Pharmacy, Louisville College of Pharmacy. Graduate Student, Purdue University, Summer Session, 1936.

² Professor of Pharmacy, Purdue University School of Pharmacy.

Procedure.—The heart substance and the boric acid were intimately mixed and moistened for granulation with a solution of simple elixir, one volume and alcohol two volumes. The whole mass was granulated by being pressed through a 20-mesh sieve. The granules were then spread out and allowed to dry at room temperature. Drying took place slowly but uniformly. There was virtually no fine ungranulated material in the dried lot. About 15% of the dried granules were then pulverized by light trituration. To this about 5% of a mixture of talc, three parts and starch, two parts were added. This powder mixture was added to the granular mass. After being well mixed the whole was compressed into tablets.

The mixture just described compressed without difficulty and made tablets which were acceptable as to appearance, durability and disintegration.

Comments.—It should be said that this formula granulated almost ideally, it dried slowly and yielded no fine powder upon drying. It offered no trouble upon being compressed. The disintegration time was not fast but the tablets were always completely broken down in water within about thirty minutes.

Objections might be made to the presence of boric acid. Our excuse for using it is that it works well in this formula.

The use of simple elixir as a part of the moistening agent imparts a faint but pleasing aromatic odor to the rather unpleasant glandular substance.

COMPRESSED TABLETS OF DESICCATED LIVER SUBSTANCE.

	Formula 1.	Formula 2.
Desiccated liver substance	90	90
White dextrin	7	..
Boric acid	..	5
Potato starch	1.2	2
Talcum	1.8	3
Granulating liquid	Alcohol, 80%	Alcohol, 1 volume Simple elixir, 2 volumes

Two formulas are offered for this product because both compressed into very good looking tablets. One is made with boric acid, the other without it.

The general procedure in this case was about the same as for the heart substance and the details need not be repeated.

Formula 1 dried, after granulation, much more quickly than Formula 2, and had about 5% of fine powder while Formula 2 had 15%. Both formulas were easily compressed into three different sizes of tablets. Formula 2 required less compression than Formula 1 and had the advantage of the odor imparted by the simple elixir.

Formula.	
Desiccated pancreas substance.....	50
Boric acid.....	10
Potato starch.....	5
Talcum.....	10
Sodium chloride.....	20
Lubricant.....	5
Potato starch....	2
Talcum.....	3
Alcohol	

Procedure.—The first five ingredients were thoroughly mixed and massed for granulation by the addition of alcohol. The mass granulated rapidly and dried rather slowly but satisfactorily.

The tablets from these two formulas fulfilled the requirements of good compressed tablets as to appearance, durability, and solubility.

COMPRESSED TABLETS OF DESICCATED PANCREAS SUBSTANCE.

The formulas which were satisfactory for heart and liver substances would not do for pancreas substance. After a number of variations in formulas and modifications in technique, the following formula was devised. It makes very good looking tablets.

In several attempts to compress various formulas of desiccated pancreas it was observed that the mass soon became sticky and gummed the punches, due perhaps to the hygroscopic character of the dried pancreas. With the above formula this trouble was entirely obviated by drying the granules in an oven at 100° for about one hour. The dried granules were then mixed with the lubricating powder and compressed without delay.

The tablets which we made, as just described, were quite acceptable as to appearance, durability and solubility. Whether they will remain stable upon standing remains to be seen. Observations are being made upon them from time to time.

Comments.—In the first place this formula is but fifty per cent pancreas. Secondly, it contains ten per cent boric acid. Thirdly, the temperature required to dry this formula sufficiently for compression is too high for such products.

SUMMARY.

It has been observed that large amounts of the moistening agents were necessary to effect proper dampness for granulation.

We have been able to produce granulation without resorting to the bases or excipients suggested for tablets of glandular products. Those most often mentioned are lactate, phosphate, and glycerophosphate of calcium, and alkaline bases or salts

NOTE: The formulas submitted are given for their technical interest.

A GREATER KNOWLEDGE OF PHARMACOLOGY IS ESSENTIAL TO
THE PROFESSIONAL PHARMACIST.*

BY A. O. MICKELSEN.¹

The advancement of modern medicine has had a definite effect on the importance of pharmacology to the medical student. The course, pharmacology, is undoubtedly a better one to-day than a decade ago, though other courses are receiving greater attention in the medical college. The medical student is naturally devoting his greatest interest and attention to subjects stressed in modern medicine.

Pharmacology is receiving more scientific research than ever before, and professional magazines are filled with interesting records of experiments. It is becoming a distinct and separate profession with a prerequisite training, not as a doctor nor a pharmacist, but as a pharmacologist. The demand for pharmacologists is increasing. The following quotation is from the United States Public

* Section on Practical Pharmacy and Dispensing, A. PH. A., Dallas meeting, 1936.

¹ Dean, School of Pharmacy, North Pacific College of Oregon, Portland, Oregon.