THE CHEMISTRY OF DIGITALIS.

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Since first bringing this subject forward two years ago little progress has been made worthy of publication. My object at this time is not so much to present new facts as to review the present condition of the problem and make clear just what is the nature of the barrier to progress.

It is possible to separate from an extract of digitalis leaves—an extract preferably prepared by use of 70% alcohol—very active material almost as toxic as digitoxin, 1 Gm. of which represents about 100 Gm. of digitalis leaves of average quality. Attempts to purify this further by separating an active from an inactive part have so far proved fruitless. It is apparently possible to separate this material into two parts, one soluble and one insoluble in chloroform. This is an inexact separation since neither part is absolutely true to its apparent characteristic, for repeated applications of the solvent will change slightly their relative proportions, without, however, causing either to disappear or to become inert.

Both parts respond to the color test of Keller's reagent exactly alike and practically identical with the test for digitoxin (U. S. Dispensatory). But the more active of the two parts is insoluble in chloroform and ether while digitoxin is said to be readily soluble. While neither part is soluble in water to an appreciable extent the part insoluble in chloroform dilutes with water to a clearer solution than the other and remains in solution even when the alcohol has been completely driven off by heat. This suggests a commercial outlet for such a product in spite of its apparent insolubility.

The most logical application of the isolated substances is in alcoholic solution in a strength somewhat greater than that of the U. S. P. tinctures. In this form it is a very pale straw color and with an activity of 6 H. T. U. per milligram—this being the activity of the official tincture digitalis per cc.

In this form it is greatly increased in stability and should represent a distinct advance in the pharmacy of this useful drug.

The difficulties in the way are inability to purify to an absolutely uniform activity; inability to eliminate one or the other of the two constituents which have so many points of similarity as well as being indistinguishable pharmacologically; inability to obtain a water-soluble product suitable and convenient for clinical application.

One point I wish to emphasize is this—that no step in the process of purification can by any possible means have changed the chemical or pharmacological properties of the active agents from the form and the action they (or it) had in the original state since the purification is entirely accomplished by means of immiscible solvents or combinations of solvents and by precipitants which combine only with the inert material.

Whatever active agent (or agents) is prepared, therefore, is not a changed product but represents the original drug in every respect.

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