(a) the total alkaloids have activity against all the organisms tested.

(b) *Staphylococcus aurcus* and *Shigella sonne* are more susceptible than the other organisms.

(c) reserpine in 1/10 dilution has no antimicrobial property.

(d) no appreciable difference in the inhibitory concentration is noticed between the alkaloids and the solvents used against *Myco tuberculosis* $H_{37}R_v$. Hence, the alkaloids can be considered to be without anti-tubercular activity.

It is particularly significant that the total alkaloids inhibit the growth of *Staphylococci* and *Shigella sonne*. Many outbreaks of diarrhœas are, of late, being attributed to these two organisms, and hence, the use of *Rauwolfia* decoctions in such conditions may be explained. However, controlled clinical trials are essential to translate the "*in vitro* activity" to therapeutic use.

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USE OF HEAVY WATER IN ORGANIC CHEMISTRY

IN the organic synthesis section, Division of Pure Chemistry, National Research Council, Canada, the following organic compounds labelled with deuterium have been synthesized for use in chemical kinetics, photochemistry and spectroscopy.

(1) Decomposition of the carbide Mg_2C_3 with deuterium oxide gives an excellent yield of propyne-d, $CD_3C \equiv CD$. Several other compounds can be prepared from this material. For instance, chlorination gives 1, 1, 2, 2-tetrachloropropane-d_4, ($CD_3CCl_2CDCl_2$) from which, in turn, 1, 1, 2-trichloropropene-d_2 or *cis*- and *trans*-1, 2-dichloropropane-d_1 can be prepared.

(2) Addition of deuterium bromide to a double or triple bond is another simple method of introducing deuterium into organic compounds. Thus acetylene-d_2 gives a quantitative yield of 1, 2-dibromoethane-d_1. Alternatively, deuterium bromide may be reacted with ordinary acetylene to give 1, 2-dibromoethane-1, 2-d_2. It has been possible to transform both of these compounds into others, e g., ethylene-d_4, ethyl-d- bromide, ethylene-d_4 oxide, etc

(3) Deuteration of organic compounds can also be effected by exchange. Such reactions are catalysed by finely divided metals such as nickel or platinum. For example, benzene is easily deuterated to benzene-d_6 by repeated exchange with deuterium oxide in the presence of platinum black Exchange reactions may also be catalyzed by acids or bases. Trichloroethylene readily exchanges its hydrogen for deuterium when heated with deuterium oxide containing a weak base. An example of an acid-catalyzed reaction is the conversion of malonic acid to malonic-d_2 acid-d_2, namely, $CD_2(CO_2D)_2$.

(4) Sometimes it is more expedient to prepare a compound by reacting a suitable starting material with deuterium oxide and then enriching the product by exchange. For example, about 20 exchanges are required to convert acetone to acetone-d_6. Considerable time is saved by just preparing deuterated acetone (about 90%) from deuteroacetylene and then enriching it by exchange with heavy water.

The greatest difficulties are encountered in the synthesis of compounds labelled with deuterium in a specific position. A discerning choice of starting material must often be made. For instance, when it recently became necessary to prepare butene-1-4, 4, 4-d_3, $CD_3CH_2CH = CH_2$, the problem was solved by reacting the halide $CCl_3.CH_2.CHBr.CH_2Cl$ with zinc and acetic acid-d. In another case, acetaldehyde labelled in the formyl group was prepared by applying Nef reaction to the deuterated nitroethane, $CH_3CD_2NO_2$. The formation of the acetaldehyde-d, disproved a mechanism proposed for the Nef reaction in 1950. These synthetic methods are being extended in several directions (*N R.C. Res. News*, Vol. 8, No. 2).