

11 (1971)

A phyto-pharmacological study of some isomers.

By DAVID I. MACHT

[*From the Pharmacological Laboratory, Johns Hopkins University, Baltimore, Md.*]

A phyto-pharmacological study was carried out much in the same way as the effects of cocaine were studied by Macht and Livingston. The influence of a number of isomeric drugs was studied on the roots of *lupinus albus*. The following structural chemical isomers were examined: normal propyl alcohol and isopropyl alcohol, primary butyl alcohol and secondary butyl alcohol; primary amyl alcohol and secondary amyl alcohol. It was found in every case that the normal or primary alcohols were more toxic to the growth of the lupine than the corresponding secondary alcohols.

The following stereo-isomers were examined: laevogyrous camphor, dextrogyrous camphor and optically inactive camphor; quinin and quinidin; cinchonin and cinchonidin. It was found that laevogyrous camphor was more toxic than the dextro variety, while the inactive camphor produced an effect equivalent to the mean of the other two. Quinin (sulphate) which is laevogyrous was found to be more toxic than quinidin (sulphate) which is its dextrogyrous isomer. In the same way cinchonidin (sulphate) which is laevogyrous was more toxic than cinchonin (sulphate) which is its dextrogyrous isomer.

The difference in toxicity between the various forms of camphor is also illustrated by the effect of solutions of these drugs on the growth of moulds and bacteria. Aqueous solutions of the three varieties of camphor were made and exposed to the air. It was found that the dextro-camphor solution very soon became cloudy. The solution of inactive camphor became contaminated with bacteria and moulds some time later, while the solution of laevogyrous camphor remained clear for a very long time. The relative toxicity of both the primary and secondary alcohols and the various stereo-isomers which were studied corresponds to the relative toxicity of the same drugs for animals tissues as studied by the author.