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EFFECTS OF SINGLE AND REPEATED ADMINISTRATION OF WATER SOLUBLE  
1- $\Delta^9$ -TETRAHYDROCANNABINOL (W-THC) ON WEB-BUILDING OF SPIDERS.  
R. D. Ford\*, Peter N. Witt and Mabel B. Scarboro\*. N. C.  
Department of Mental Health, Research Division, Raleigh, N. C.  
27611.

The building frequency and geometry of the orb-web were observed and measured in four randomly selected groups of the cross-spider Araneus diadematus Clerck. Two groups were administered a dose of W-THC equivalent to 200 or 600 mg/kg 1- $\Delta^9$ -tetrahydrocannabinol ( $\Delta^9$ -THC) by mouth in sugar water. The other two groups received in the same manner the corresponding dosages of the ester (used to make  $\Delta^9$ -THC water soluble), and served as vehicle controls. Only one application of 600 mg/kg  $\Delta^9$ THC produced statistically significant effects; these consisted of a decrease in web-building frequency and a change in the geometry of the lower part of the web, tending to make the normally oval shape more circular, without altering thread length or any other measures. When administration of the dose (600 mg/kg) was repeated ten times, once every other day, the effects persisted and increased; the few webs built were smaller and tended toward a circular shape. -The effects of this drug are distinct from those of all other drugs tested on web-building behavior. W-THC webs showed some resemblance to webs built after the application of strychnine. No significant development of tolerance to the drug effects on web-building was detected. (Supported by NIMH fellowship MH 1107-04 and NSF Grant GB-25274).