The structure of the amino acid derivative alaninamide was determined by substitution of all the heavy atoms except oxygen. Assignment of the rotational spectrum of the 1:1 complex of alaninamide and water yielded rotational constants for the most abundant isotopomer: \( \Lambda = 4789 \ (3) \text{ MHz}, B = 1271.872 \ (8) \text{ MHz}, \text{ and } C = 1111.394 \ (8) \text{ MHz} \). Preliminary data from two \(^{15}\text{N}\) isotopomers indicate that the conformation of the alaninamide monomer is relatively unchanged upon complexation and that the water complex has a cyclic hydrogen bonded network, in which the water interacts with the carbonyl oxygen and an amide hydrogen.