Many biological processes such as chemical recognition and protein folding are mainly controlled by the interplay between hydrogen bonds and dispersive forces. Broadband rotational spectroscopy studies of weakly bound complexes are able to accurately reveal the structures and internal dynamics of molecular clusters isolated in the gas phase. To investigate the influence of the interplay between different types of weak intermolecular interactions and how it controls the preferred active sites of an amphiphilic molecule, we are using camphor \((\text{C}_{10}\text{H}_{16}\text{O}, \text{1,7,7-trimethylbicyclo}[2.2.1]\text{hepta-2-one})\) with different aliphatic alcohol systems. Camphor is a conformationally rigid bicyclic molecule endowed with considerable steric hindrance and has a single polar group (-C=O). The rotational spectrum of camphor and its structure has been previously reported [1] as well as multiple clusters with water [2]. In order to determine the structure of the camphor-alcohol complexes, we targeted low energy rotational transitions in the 2-8 GHz range under the isolated conditions of a molecular jet in the gas phase. The data obtained suggests that camphor forms one complex with methanol and two with ethanol, with differences in the intermolecular interaction in both complexes. With these results, we aim to study the shift in intermolecular interaction from hydrogen bonding to dispersion with the increase in the size of the aliphatic alcohol.