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Design, synthesis and biological evaluation of mannose-based glycodendrimers as potent dc-sign antagonists for dengue infection

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DC-SIGN is a C-type lectin expressed on dendritic cells. It contains four Ca2+- dependent carbohydrate recognition domains that specifically recognize complex mannose glycans present on the surface of invading microorganisms. For some pathogens, including viruses like HIV, Ebola or Dengue [1], this recognition event contributes to infection transmission, making DC-SIGN a very interesting target for the design of antiviral agents. Dengue virus infection (DENV) is currently expanding worldwide since it is present in more than 128 countries in the world[2]. DENV is the most prevalent mosquito-borne viral disease causing clinical syndromes in humans. As there is no available vaccine or treatment, DENV infection has become a major international public health concern and the search for anti-dengue treatment is of extreme importance and it is an active field of research. Among the DC-SIGN antagonists reported in the literature, two mannose derivatives have drawn ourattention (Ligand I[3] and Ligand II[4]), which are two of the most potent monovalent mannose derived DC-SIGN antagonists that are reported so far. The well-known weak binding affinity which characterizes carbohydrate-protein interactions, can be overcome by multivalent presentation. Based on the previous experience of our group, herein we discuss the synthesis of the two ligands I and II functionalized with an azido linker and their conjugation to a rod-core system[5] in order to prepare both hexa- and di-valent glycodendrimers as DC-SIGN antagonists.

Biography

Tareq Abu Izneid is working as professor at Umm Al Qura University in Saudi Arabia.

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