Researchers at the University of South Florida have developed three multivalent protein vaccine candidates for Clostridium difficile infection.

Incidences of C. difficile (Clostridium difficile) are on the rise in North America and Europe. C. difficile is known to cause lengthy hospitalization, has substantial risks of morbidity, and high mortality rates.

C. difficile is characterized by two major virulent factors called TcdA and TcdB. Creating an active vaccine targeting these factors is seen as the logical and most cost effective next step in treatment of C. difficile. However, no licensed vaccine for C. difficile currently exists.

USF researchers have developed three protein vaccine candidates for the treatment of C. difficile. The first fusion protein immunogen is Tcd169, which contains the glucosyltransferase domain (GT), cysteine proteinase domain (CPD) and receptor domain (RBD) of TcdB and the receptor domain (RBD) of TcdA. The second is Tcd169Fl, which contains Tcd169 and flagellin of Salmonella typhimurium (sFliC). The third is Tcd138Fl which contains the glucosyltransferase domain (GT) and cysteine proteinase domain (CPD) of TcdB, the receptor domain (RBD) of TcdA, and flagellin of Salmonella typhimurium (sFliC). Each protein contains a six-amino acid linker (GGSGGS) between each domain. These fusion proteins target both C. difficile’s method of infection and its intrinsic toxins, making it effective against new and recurrent infections. Furthermore, novel technologies have been developed for oral immunization of these highly protective vaccines.

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