

LL-37 the only human cathelicidin exhibit wide range of activity involving antibacterial antifungal and antiviral action. Also this peptide is able to stimulate the immune function including cancer suppression. This project is dedicated the developing the LL-37 analogs and their capacity to trigger/accelerate the components of human self-defense system. The main factor involved in this process is native LL-37 and later on during its degradation LL-37 fragments. It should be underlined that human cathelicidin derivated peptides fragments are described as exhibiting opposite impact as compare to whole parental peptide.

Therefore the goal of this proposals is to obtain new analog(s) of human cathelicidin that wil be resistant to two group of the enzymes: (i) proteases (neutrophil serine proteases, selected kallikreins and bacterial (ie *Staphylococcus aureus*) and (ii) protein arginine deiminases (PADs 2 and 4). All said enzymes are engaged in (i) digestion or (ii) converting the guanidine group into citrulline moiety that are essential for LL-37 properties like stimulation of immune system and killing the pathogens.

To select resistant analogs of LL-37 some amino acid residues (Arg, Lys, Phe, Leu) will be substituted by DAPEG building blocks that imitates said amino acid residues.

Because of interdisciplinary type the research is created on the mixture of the skill of the researchers from various ares (chemists and cell/molecular biologists) including collaboration with ISERM 1100 Tours France (Dr Korkmaz). Last this multidisciplinary project intends to create, synthetize and assess analog of LL37. This will be accompanied by broad cell/molecular biology experiments to solve effect of LL-37 analog on immune system. The project will deliver new molecules with improved stability with assumed ability to be starting point of clinical studies as anticancer or antiviral therapy.