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Brevinin-2R belongs to amphibian peptides family and could be synthesized via solid phase method. Our results showed strong antimicrobial activity of brevinin-2R, a 25-amino acid synthetic cationic peptide, due to probable interaction with lipid membrane. Furthermore it has an N-terminal hydrophilic region and a C-terminal loop that is delineated by an intra-disulfide bridge.The minimum inhibitory concentrations (MIC) of brevinin-2R against reference strains of Staphylococcus aureus and Staphylococcus epidermidis by broth micro dilution (BMD) method, based on current National Committee for Clinical Laboratory Standards (NCCLS) susceptibility guidelines, respectively were 1.56 and 0.39 microgram/ml. Circular Dichroism (CD) Spectroscopy was conducted to investigate the structure-activity relationship. The CD analysis revealed that amphipathic α-helical conformation of the synthesized peptides is involved in antimicrobial effects.

Keywords: Amphibian Peptides, Antimicrobial Activity, Brevinin-2R, Circular Dichroism, Broth Micro Dilution.

Abstract No.116

The Mechanism of Superb Antioxidant Activity of Curcumin

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Reactive oxygen species (ROS) namely superoxide radical ($O_2\bullet^-$), hydroperoxyl radical ($HO_2\bullet$), hydroxyl radical (HO●), peroxyl radical (ROO●), alkoxyl radical (RO●) and hydrogen peroxide (H_2O_2) are thought to be the causative agents of various diseases. A growing body of research suggests that curcumin, the yellow pigment of turmeric and curry (Curcuma longa Linn), has potential for the prevention of ROS in the biological systems. But its mechanism of action is still unclear. So far conflicting findings about both of the site of curcumin reactivity with radicals and the reaction mechanisms in ROS scavenging (H-atom transfer, HAT, or electron transfer, ET, mechanisms), have been drawn by several groups. In this research, we aimed to declare the unknown antioxidant mechanism and active sites of curcumin in polar aqueous medium (inside the cells), using different experimental methods and range of quantum computations. We found that two phenolic OH play a major role in the antioxidant activity of curcumin. Results suggest that enol and keto tautomers of curcumin reduce free radicals via ET and HAT mechanism respectively. Also, enol is more active than keto tautomer of curcumin. While, ET mechanism dominates for ROS scavenging but keto/enol tautomerism of curcumin exist at pH 7.4 and both of HAT and ET mechanism is conceivable at physiological conditions.

Keywords: B3LYP, Reducing Power, DFT, Intracellular ROS, BDE.

Abstract No.117

Effect of some Dendritic Nanocarriers on Anticancer Properties of Cucumin from Turmeric (Curcuma longa)

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Nanotechnology enables us to design novel drugs with new properties such as enhanced bioavailability, targeting specific tissues, controlled released, biocompatibility and biodegradability. Curcumin from Turmeric (Curcuma longa) has been used extensively as food additive and drug historically in eastern countries. In recent decades, anticancer effect of Curcumin has been proved by several researches. Curcumin has influence on multiple cell signaling pathways and prevent cell proliferation, invasion, metastasis and angiogenesis. But solubility of Curcumin in water and therefore its bioavailability is very low and it restricts the anticancer properties of Curcumin. In this research we tried to find appropriate nanobiotechnology tools such as dendritic nanocariers to improve solubility of Curcumin. We determined in vitro solubility and drug release of these nanocarriers and localization study by florescence quenching by acrylamide and iodide has been performed to prove that Curcumin is encapsulated inside of the dendritic nanocarriers or on the sufaces of them. Measured quantitative cellular uptake and cell toxicity of nanocurumins by MTT test in tumor cells shows that these new nano formolations have ability to increase efficiency of anticancer properties of curcumin.

Keywords: Nanocurcumin, Dendritic Nanocarrier, Curcumin, Florimetry, Anticancer.
