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Meta Analysis of eugenol Synthase-I in Ocimum basilicum

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Eugenol is one of the important chemical constituent of the essential oils of many aromatic plants, such as Eugenia caryophyllus, Dicipelium cariophyllatum, Pimenta dioica, Croton zehntneri, and Ocimum species. Recent studies suggest that Ocimum (tulsi) may be a COX-2 inhibitor, like many modern painkillers, due to its high concentration of eugenol (1-hydroxy-2-methoxy-4-allylbenzene). Ocimum is proven to be an effective treatment for diabetes by reducing blood glucose levels. Previous study showed that high glucose level in blood results in the increase transcription of Cyclooxgenase-2 (Ref:Narkunraja Shanmagum,Irene T. Gaw Ganzalo and Rama Natarajan). The basic idea behind the work is to reverse this process and for that Eugenol synthase comes in picture. Eugenol synthase suppresses COX 2 expression that has already been proved by Sun Suk Kim et al. There are around 410 experimentally proven medicinal plants having Anti-diabetic properties but the complete mechanism of action is available only for about 109. There are several medicinal plants whose extract modulate glycolysis, Krebs cycle, gluconeogenesis, HMP shunt pathway, glycogen synthesis and their degradation, cholesterol synthesis, metabolism and absorption of carbohydrates, and synthesis and release of insulin. This work provides a comprehensive overview of Meta Analysis of Eugenol Synthase-I in Ocimum basilicum.

Keywords: Eugenol synthase, COX-2, Ocimum basilicum, Meta analysis.

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Design and assay of inhibitors for pathogenic bacterial DNA gyrases

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Type II topoisomerases are the only enzymes capable of introducing negative supercoiling, hence these have a crucial cellular processes both in the treatments of anti-cancer and anti bacterial chemotherapy. Ecoli DNA Gyrase is a heterodimer with A2B2 complex, while the A domain had the function of cleavage and re-ligating the DNA strands and the B domain was involved in the ATPase catalytic activity which was important for the holoenzyme activity. Through the years, the A domain has been studied extensively and reports of fluoroquinolones inhibiting their activity was exploited for treating the bacterial infections, but their side effects, toxicity and emergence of bacterial fluoroquinolone resistance revived a growing interest in alternative compounds such as inhibitors of the ATPase catalytic domain (B domain). Though few coumarin inhibitors for DNA Gyrase are known like Novobiocin, Cyclothialidines and few synthetic derivatives like triazine, yet these have shown either high toxicity or low solubility and permeability during invivo tests. Hence search for an alternative lead compounds are still in the process. Through high throughput screening from commercial databases employing Glide, Gold and Autodock modules, few promising molecules were identified. Molecules showing good docking scores and high fitness values compare to crystal ligand are further screened in invitro and finalized. Hence these compounds would be potential leads for treating pathogenic bacterial diseases.

Biography

Renuka J has completed her MSc from Osmania University. Currently she is doing PhD in Bits Pilani, Hyderabad campus. Her area of interest is to design and screen small molecules against DNA gyrase.

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