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Role of analytical *in silico* and imaging tools in characterization and activity studies of ajoene from garlic bulbs against biofilms of *P. aeruginosa*

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Biofilm of *P. aeruginosa* impose major health issues due to its resistance towards antibiotics and host immune responses. The post-antibiotic era proposes urgent need for alternate strategies to combat biofilms. The relevance of dietary natural products is emerging in this context as they are safe to consume and have no side effects. However, the major concern in this area is the constraints in characterization and analysis of herbal compounds because of lack of availability of standards and highly complex nature of these compounds. Hence, the present study focuses on applications of analytical, imaging and *in silico* tools for analysis and activity of ajoene, a novel compound from garlic (*Allium sativum* L) bulb extract. Ajoene was extracted by TLC and showed 97.7% purity by HPLC. Further characterization was performed by H1 NMR and MS. The amount of ajoene in garlic extract was found to be 221.08 nmol/mg of extract by HPTLC. Results of TLC overlay, HPTLC and docking analysis elucidated the mechanism of action of ajoene against *P. aeruginosa*. Ajoene was found to exhibit anti-biofilm effects which were confirmed by imaging techniques such as confocal laser scanning microscopy and scanning electron microscopy. Thus, the present study throws light on the possible techniques which could be helpful in evaluating the properties of herbal products.

Biography

Anitha Vadekeetil has completed MSc Biotechnology from Bharathidasan University followed by DBT sponsored Advanced PG Diploma in Plant Genetic Engineering from Madurai Kamaraj University with distinction. Presently, she is pursuing PhD from Panjab University, Chandigarh. She has published 3 research papers in international journals.

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