Allelopathy: The Future of Antibiotic Medicine

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Common antibiotics are becoming less effective as bacteria are acquiring an increased resistance. A solution to this problem may lie in plant derived allelopathic molecules (allelomolecules), such as those contained in essential oils. A series of experiments was conducted to identify and characterize allelomolecules in the essential oils of Melaleuca alternifolia, Cinnamomum zeylanicum, and Mentha piperita. Fractional distillation was used to separate molecules by their boiling point, followed by antibiotic sensitivity tests on each of the fractions. Gas Chromatography Mass Spectrometry (GC-MS) was then used to identify the abundant molecules in each fraction. Several abundant molecules were identified across multiple fractions, particularly Limonene and Menthane. By identifying the unknown molecules that give these allelopaths their antibacterial properties, then the resulting allelomolecules, as well as those that share similar characteristics, may serve as candidates for potential alternative antibiotics.

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