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Review

Insights on phytochemicals as antimicrobial potentiators: a review

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Abstract

Ethnopharmacological research has been focused on finding novel anti-infective drugs in the last few decades. Many studies have been conducted on the antimicrobial activity of natural plant extracts used in traditional medicine, essential oils, or isolated compounds consisting of quinones, alkaloids, flavonoids, terpenes, coumarins, etc. These studies have focused on the therapeutic properties of plants or their active ingredients in terms of fighting a particular pathological microorganism.

The pharmaceutical industry is moving toward the expansion of structural chemotypes, since natural products are the main source of antibacterial leads. This emphasizes the immediate use of virtual libraries of more adaptable compounds, which have a propensity to be less structurally diverse.

Moreover, the majority of these drugs are derived from older drug classes that are currently in use and are susceptible to bacterial resistance mechanisms. Thus, the need to develop new medication classes is important. In order to incorporate novel natural products and guarantee that promising high-potential antimicrobial agents from structure-based drug design may be properly settled on target sites within the bacterial cell, it should be highlighted that diversification of screening libraries is necessary.

The objective of this work is to integrate knowledge from the vast, often scattered, literature on antimicrobial agents in order to select those with direct inhibitory activity and those that enhance antibiotic activity. Natural products should be thoroughly provided as soon as their chemotherapeutic or chemopreventive potential can be assessed in a manner relevant to our pharmacological research. This report will facilitate a preliminary inventory of the frequent use of medicinal plants containing active substances of curative interest, in order to screen the main natural products of interest. The objective of this work is to compile an exhaustive list of bioactive substances in order to correlate, on the one hand, their activity with their structure and, on the other hand, their modes of action with their antimicrobial potential.

Keywords:
Antimicrobials, Phytochemicals, Virtual libraries, Chemotherapeutic, Chemoprophylactic.

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