Mini Review
Volume 8:8, 2022

Journal of Antimicrobial Agents

ISSN: 2472-1212 Open Access

Synergistic Effect of Sertraline and *Cinnamomum Verum* Essential Oil

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Abstract

One of the most frequently used essential oils in the field of aromatherapy is Cinnamomum velum L. essential oil also known as Ceylon cinnamon or cinnamon tree. It serves as an astringent, antipruritic, rubefacient and antiseptic agent when applied externally. Additionally, both in vitro and in vivo studies have shown its wide range of pharmacological effects, including the potential to treat headache, migraine, myalgia and neuralgia. Numerous studies have also supported its potent antiviral and antimicrobial qualities. The most representative substances that are typically present in greater quantities in and are crucial in determining its pharmacological activities are cinnamon aldehyde, eugenol, caryophyllene, cinnamyl acetate and cinnamic acid. Because of the situation with antibiotic resistance globally and the decreasing funding for developing

Keywords: Sertraline • Microdilution method • Essential oil

Introduction

Antimicrobial resistance is a result of the emergence and spread of drug-resistant pathogens, which continues to jeopardise our ability to treat frequently occurring infectious diseases. The rapid global spread of multidrug-resistant bacteria, which cause infections that cannot be treated with current antimicrobial medications like antibiotics, is particularly concerning Drug-resistant bacteria pose a serious threat to global public health, necessitating the urgent development of new antimicrobial agents. To address this issue, numerous research programmes have recently focused on the creation of novel compounds that may have antimicrobial effects and new sources, such as antimicrobial compounds derived from plants, have been thoroughly studied since they may be a promising source of new natural remedies, essential oils have undergone extensive pharmacological research display

Description

In our previous studies we showed the synergistic effect of several in combination with some commercially available antimicrobials, demonstrating the efficacy of these combinations and suggesting the potential of a new therapeutic use Recently, different medicinal products of disparate therapeutic classes are being studied as antimicrobials in the drugs-repurposing approach that is an interesting alternative to treating infectious diseases provoked by multidrug-resistant pathogens. on-antibiotic drugs" has been applied to these substances Statins, non-steroidal anti-inflammatory drugs and psychoactive medications, among others, have been shown to have antimicrobial effects The third-generation antidepressants known as selective serotonin reuptake inhibitors such as fluoxetine, paroxetine and sertraline, were found to have the highest antimicrobial activity One of them, sertraline, increased the effectiveness of various antibiotics, counteracted the multidrug resistance of pathogens and made them susceptible to medications to which they had previously developed resistance Associating repositioned medications with is another beneficial strategy for quick identification of cutting-edge treatments for acute infections. In a recent study, we showed that diclofenac has a synergistic antifungal effect [1,2].

Although the use and discovery of antibiotics mark a significant advancement in medicine, the emergence of antibiotic drug resistance is now a serious issue that requires attention. Because of this, research is focusing on the strategy of repositioning medications that are already known for other therapeutic properties and may have unintended consequences, like potential antibiotics. Wider antibacterial coverage and perhaps a reduction in acquired resistance could result from an efficient combination of therapy for the treatment of bacterial infectious diseases. Another intriguing method for finding new treatments for acute infections is the combination of repositioned drugs. Studies have shown that the antidepressant sertraline exhibits an antimicrobial effect against various bacterial strains alone or in combination with other drugs, in addition to its intended use [3].

Each bacterial suspension consisted of colonies for each strain taken from a plate and dissolved in 2 mL of Mueller Hinton Broth. The bacterial species were cultured on Mueller Hinton Agar. The suspensions were adjusted to after being diluted with solution .Before testing; two subcultures were applied to the bacteria. At each bacterial suspension was removed from its frozen stock. The strains were diluted in 5 mL of Muller Hinton broth and then incubated at 35 °C for 48 hours while being stirred. In accordance with the recommendations of Protocol MIC values were calculated using the broth microdilution method. The checked method outlined by White et al. was applied in the combined trials to evaluate the synergistic action of and sertraline. The same technique used to evaluate the was used to prepare double-series dilutions of protocol have undergone some modifications for our experimental process. For a stock solution concentration of 2 mg, pure sertraline powder was dissolved; subsequent serial dilutions produced results in the range of for, results in the range of using components from checkerboard testing was done in in microdilution plates. Fourfold level above the concentration for each compound tested was used to prepare drug dilutions that were prepared in increments of two [4,5].

Conclusion

Since they have produced effective results recently, drug synergistic associations represent a viable strategy in antimicrobial therapies. Our earlier research on showed the value of these associations when it came to interacting with either antibiotics or non-antibiotic medications. The results of this study

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Received: 03 August, 2022, Manuscript No antimicro-22-83818; **Editor assigned:** 05 August, 2022, PreQC No. P-83818; **Reviewed:** 17 August, 2022, QC No. Q-83818; **Revised:** 22 August, 2022, Manuscript No. R-83818; **Published:** 29 August, 2022, DOI: 10.37421/2472-1212.2022.8.285

demonstrate that sertraline, a selective serotonin reuptake inhibitor with successfully demonstrated antibacterial activity, works synergistically with in vitro to exert a decisive and potent action against a broad panel of bacteria. For all tested Gram-positive and Gram-negative strains, the sertraline association led to a very potent synergistic mode of action, as determined by the indices, whose values were significantly below the threshold value of consequently, the combination of both compounds substantially.

Acknowledgement

None.

Conflict of Interest

None.

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How to cite this article: Veliz, Karoly. "Synergistic Effect of Sertraline and *Cinnamomum Verum* Essential Oil." J Antimicrob Agents 8 (2022): 285.