MOL2NET, International Conference Series on Multidisciplinary Sciences
MODEC-05: Nat. Prod. & Agro-Indust. Proc. in Amazon, UEA, Puyo, Ecuador, 2020

Promising activity of *Cissus incisa* extracts against Mycobacterium Tuberculosis H37RV strain

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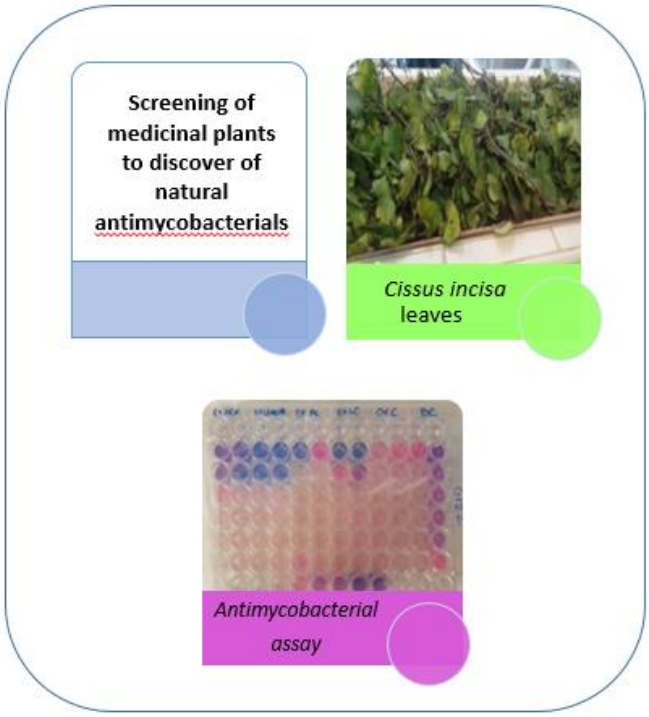
Graphical Abstract



Abstract

Tuberculosis (TB) is a bacterial infection caused by the bacillus *Mycobacterium tuberculosis*. It usually affects the lungs, but it can also affect other sites (extrapulmonary TB).

In the "Global Tuberculosis Report 2018", TB is recognized as one of the 10 main causes of death worldwide and the main cause of a single infectious agent (above HIV/AIDS).

By the other hand, medicinal plants have been widely used to treat this disease. Some extracts derived from plants are known to have antimycobacterial properties, and can be of great significance in therapeutic treatments. For that reason, we aimed to evaluate the antimycobacterial activity of *Cissus incisa* leaves on a sensible strain. Three extracts were prepared from collected leaves of this plant: hexane, chloroform methanol (1:1) and aqueous. The antitubercular activity was evaluated on *M. Tuberculosis* H37RV strain (ATCC), using Alamar Blue assay. The hexane and chloroform/methanol extracts were the most active (MIC=250 µg/mL). Until the best of our knowledge, there are no studies related to the traditional use of this plant for treat tuberculosis.

The present investigation will contribute to the discovery of potential antibacterial agents derived from plants, and to expand the use of *C. incisa* in traditional medicine.

Introduction

According with WHO estimations, a quarter of the world population suffers from latent tuberculosis, a term applied to people infected with the bacillus but who have not yet become ill, and cannot transmit the infection. People infected with the bacillus, they have a lifetime risk of falling ill with tuberculosis (5-15%). In contrast, immunocompromised people, for example those with HIV, malnutrition, diabetes, and tobacco users are at a much higher risk of falling ill with TB. The dosage regimens for the treatment of this disease are prolonged, for that reason, more effective drugs are needed, and they are less vulnerable to antimicrobial resistance. [1, 2, 3,4].

The aim of this study was to evaluate the antimycobacterial activity of extracts from *C. incisa* leaves on a sensible strain *of M. Tuberculosis.*

Materials and Methods *(optional)*

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Results and Discussion

Table 1. Antimycobacterial results of *C. incisa* extracts. MIC (µg/mL)

Samples	**H37Rv *M. tuberculosis***
Hexane extract	250
$CHCl_3$/MeOH extract	250
Aqueous extract	>500
Isonizide	> 50
Rifampicin	> 50
Ethambutol	50

Conclusions

The antimycobacterial potential of the extracts from *C. incisa* leaves on a sensible strain, is reported for first time. The results obtained encourage to further investigation to isolate and separate individual phytochemicals. This is because novel active phytocompounds on same strain, can be obtained, which will contribute to improve current anti-tuberculosis regimen.

References

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[3] WHO. Tuberculosis. Descriptive note. http://origin.who.int/mediacentre/factsheets/fs104/es/ (Accessed 4 June 2020).