

Antimicrobial Activity of the Compound 2-Piperidinone, N-[4-Bromo-n-butyl]- Extracted from Pomegranate Peels

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HIGHLIGHTS

- Extraction, isolation, and estimation of PNbb in pomegranate peels.
- Use GC-mas technique to diagnose the PNbb extracted from pomegranate peels.
- The study of the biological efficiency of compound PNbb against three types of clinical pathogenic.
- Demonstrate the biologic activity of the extracted organic compound PNbb by finding the statistical values by finding the statistical values f the extracted organic com

Abstract

Objective: The biological efficiency of one of the 2-piperidinone, N-[4-bromo-n-butyl]- (PNbb) compounds that are isolated from the pomegranate peel extract was studied. **Materials and Methods:** Using organic solvents, seven compounds were isolated from 200 g dried pomegranate peels by Soxhlet extractor. PNbb with the use of solvents such as methanol, chloroform, ethyl acetate, and hexane was applied. The extraction ratio was higher when methanol was used and chloroform exhibits less. All the extracts were analyzed by the gas chromatography–mass spectrometry (GC-MS) to identify and characterize the chemical compounds present in the raw extract in both aquatic and organic layers. Each extracted isolated compound was detected using a number of internationally recognized detection methods. By taking the highest concentration of the PNbb and less concentration of the compound, the biological efficacy of PNbb was investigated against pathogenic microorganisms. The study of activity of inhibition of pathogenic isolates was achieved using the potato culture medium Dextrose Agar. The PNbb has demonstrated excellent bioavailability against clinical pathogenic isolates. **Results:** The GC-Mas detection process showed the presence of seven compounds in the pomegranate peel extract. The same technique demonstrated the possibility of extracted PNbb compound using various solvents, its potential for inhibition evaluation, and the study of its biological effect against clinical pathogenic isolated. **Conclusions:** In the present investigation, seven active compounds have been identified from by GC-MS, one of these compounds as bioactive compound (PNbb) that probably use as against pathogenic microbes. The presence of bioactive compounds in pomegranate peels proved pharmaceutical importance. However, further studies will require to find its bioactivity and toxicity profile.

Key words: Antimicrobial activity, clinical pathogenic isolated, pomegranate peel extract

INTRODUCTION

The 2-piperidinone, N-[4-bromo-n-butyl]- (PNbb), IUPAC Name [1-(4-bromobutyl) piperidin-2-one], is a member of the class of delta-lactams, i.e., 2-piperidinone in which the amide hydrogen is replaced by a 4-bromobutyl group. It is a delta-lactam and an organobromine compound, and due to its selectivity, it is effective against a number of biological activities. PNbb is

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