Insecticidal investigation of *Berberis Royleana* various extracts against *Callosobruchus Maculatus*

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**Article Info**

Received: 13-05-22  
Revised: 19-05-22  
Accepted: 03-08-22

**Keywords**

*Berberis royleana*, *Callosobruchus maculatus*, insecticidal, Pakistan

The residents of remote areas in the developing countries mostly rely on traditional plants to cure different ailments. The current study was carried out to check biological activity of *B. royleana*, this study was designed to explore the *in vitro* insecticidal activity of *B. royleana* in various extracts against the insect *C. maculatus*. *B. royleana* is a rare species among *Berberis*, their root’s antiperiodic, antipyretic, and diaphoretic activity was said to be comparable to quinine. The shoot has antibacterial, anti-periodic, cardiovascular, hepatoprotective, and anti-cancer properties. In this study, a healthy *B. royleana* plant was collected from Azad Kashmir, Pakistan in February 2021 and processed in the Microbiology Laboratory of Abasyn University Peshawar, Pakistan. *Berberis royleana* plant methanolic, *n*-hexane, chloroform, water, and ethyl acetate extracts were prepared and their *in vitro* insecticidal potential was explored against the insect *Callosobruchus maculatus*. The 100µg of each extract was tested by direct contact application process at three different times (24, 48, and 72 hours) intervals. The maximum mortality rate of 60% was recorded by water fraction, the methanolic fraction has 50% mortality, *n*-Hexane has 40% mortality, while ethyl acetate and chloroform have 30% mortality at 72 hours. This study concluded that from the medicinal point of view the specie is very significant having great potential for insecticidal activities against *C. maculatus*. Though there are certain limitations in this study but the gap could be filled through further studies. As a result of the good insecticidal effects achieved, *B. royleana* could be investigated against dengue and malarial vectors in the current senior. In addition, the side effects could be addressed to avoid any mishaps.