

**SKRINING AKTIVITAS SITOTOKSIK EKSTRAK ETIL ASETAT JAMUR
ENDOFIT DARI DAUN DAN BUAH BIWA (*Eriobotrya japonica*
(Thunb.) Lindl.) MELALUI METODE *BRINE SHRIMP*
*LETHALITY TEST (BSLT)***

ABSTRAK

Kanker merupakan penyakit yang ditandai oleh pertumbuhan sel yang tidak terkendali dan dapat menyebar ke jaringan atau organ lain. Keterbatasan terapi yang tersedia serta efek samping yang ditimbulkan mendorong pencarian sumber senyawa antikanker baru dari bahan alam. Salah satu sumber potensial adalah jamur endofit yang hidup berasosiasi dengan tumbuhan dan mampu menghasilkan metabolit sekunder bioaktif. Tumbuhan Biwa (*Eriobotrya japonica* (Thunb.) Lindl.) diketahui memiliki aktivitas sitotoksik, namun penelitian mengenai jamur endofit yang berasosiasi dengannya masih sangat terbatas. Penelitian ini bertujuan untuk mengidentifikasi karakteristik jamur endofit dari daun dan buah Biwa, menentukan aktivitas sitotoksiknya menggunakan metode *Brine Shrimp Lethality Test (BSLT)*, serta mengidentifikasi profil senyawa pada ekstrak isolat dengan aktivitas sitotoksik tertinggi. Penelitian dilakukan dengan mengisolasi jamur endofit dari daun dan buah Biwa, identifikasi makroskopis dan mikroskopis, kultivasi pada media beras, ekstraksi menggunakan etil asetat, pengujian sitotoksik dengan metode BSLT, dan analisis senyawa menggunakan LC-MS/MS. Hasil penelitian menunjukkan 14 isolat jamur endofit dengan karakteristik morfologi yang beragam, dan 10 isolat berhasil dikultivasi serta diekstraksi. Seluruh ekstrak menunjukkan aktivitas sitotoksik dengan nilai LC_{50} berkisar antara 5,089–545,463 ppm. Ekstrak isolat EJB1, EJB4, dan EJD4 tergolong sangat toksik dengan nilai LC_{50} berturut-turut 5,089 ppm, 10,306 ppm, dan 8,690 ppm. Analisis LC-MS/MS terhadap ekstrak isolat EJB1 mengidentifikasi beberapa metabolit utama, yaitu methyl 2,4,6-trihydroxybenzoate, 4-ethyl-2,6-dimethoxyphenol, tuberonic acid, kojic acid, dan α -linolenic acid. Berdasarkan hasil tersebut, jamur endofit yang berasosiasi dengan Biwa berpotensi menjadi sumber senyawa bioaktif yang dapat dikembangkan sebagai kandidat antikanker.

Kata kunci: *Eriobotrya japonica*, jamur endofit, sitotoksik, BSLT, LC-MS/MS.

**CYTOTOXIC ACTIVITY SCREENING OF ETHYL ACETATE EXTRACTS
OF ENDOPHYTIC FUNGI ISOLATED FROM LOQUAT (*Eriobotrya
japonica* (Thunb.) Lindl.) LEAVES AND FRUITS USING THE
*BRINE SHRIMP LETHALITY TEST (BSLT) METHOD***

ABSTRACT

Cancer is a disease characterized by uncontrolled cell growth that can spread to other tissues or organs. The limitations of available therapies and their side effects have spurred the search for new sources of anticancer compounds from natural materials. One potential source is endophytic fungi that live in association with plants and are capable of producing bioactive secondary metabolites. The loquat plant (*Eriobotrya japonica* (Thunb.) Lindl.) is known to possess cytotoxic activity; however, research on the endophytic fungi associated with it remains very limited. This study aims to identify the characteristics of endophytic fungi from loquat leaves and fruits, determine their cytotoxic activity using the Brine Shrimp Lethality Test (BSLT), and identify the chemical profile of the extract from the isolate with the highest cytotoxic activity. The study was conducted by isolating endophytic fungi from loquat leaves and fruits, performing macroscopic and microscopic identification, culturing them on rice medium, extracting them using ethyl acetate, testing for cytotoxic activity using the BSLT method, and analyzing the compounds using LC-MS/MS. The results showed 14 endophytic fungal isolates with diverse morphological characteristics, and 10 isolates were successfully cultured and extracted. All extracts exhibited cytotoxic activity with LC_{50} values ranging from 5.089 to 545.463 ppm. The extracts of isolates EJB1, EJB4, and EJD4 were classified as highly toxic, with LC_{50} values of 5.089 ppm, 10.306 ppm, and 8.690 ppm, respectively. LC-MS/MS analysis of the EJB1 isolate extract identified several major metabolites, namely methyl 2,4,6-trihydroxybenzoate, 4-ethyl-2,6-dimethoxyphenol, tuberonic acid, kojic acid, and α -linolenic acid. Based on these results, the endophytic fungi associated with Biwa have the potential to serve as a source of bioactive compounds that can be developed as anticancer candidates.

Keywords: *Eriobotrya japonica*, endophytic fungi, cytotoxicity, BSLT, LC-MS/MS.