Intisari

GMEKP 1 merupakan strain *Bacillus velezensis* yang diisolasi dari sarang lebah pada pohon bambu di Yogyakarta. *Bacillus velezensis* memiliki aktivitas antagonistik terhadap fungi fitopatogen yang dimediasi oleh produksi senyawa bioaktif. Penelitian ini bertujuan untuk menguji aktivitas dan mengidentifikasi senyawa bioaktif yang berpotensi memiliki kemampuan antifungi terhadap *Fusarium oxysporum* fitopatogen. Pengujian dilakukan melalui evaluasi senyawa organik volatil (SOV) dan senyawa bioaktif terhadap *F. oxysporum*, kemudian senyawa bioaktif diidentifikasi melalui *genome-mining*. Hasil penelitian menunjukkan bahwa GMEKP 1 mampu menekan pertumbuhan *F. oxysporum* secara signifikan sebesar 24,81% oleh SOV; serta sebesar 60,74% pada medium NA dan 62,22% pada medium PDA oleh senyawa bioaktif. Analisis *genome-mining* mengungkapkan GMEKP 1 memiliki *bacilysin, surfactin,* dan *fengycin* sebagai senyawa antifungi terhadap fitopatogen.

Kata kunci: Aktivitas antifungi, *Bacillus velezensis* GMEKP 1, *Fusarium oxysporum*, *genome-mining*, senyawa bioaktif.

Abstract

GMEKP 1 is a strain of *Bacillus velezensis* isolated from a natural bamboo hive of stingless bees in Yogyakarta. *B. velezensis* has antagonistic activity against phytopathogenic fungi which is mediated by the production of bioactive compounds. This study aims to test the activity and identify bioactive compounds that may have antifungal abilities against phytopathogenic *Fusarium oxysporum*. The test was carried out through evaluation of volatile organic compounds (VOC) and bioactive compound on *F. oxysporum*, continued with identification of bioactive compound through genome-mining. The results showed that GMEKP 1 was able to significantly inhibit the growth of *F. oxysporum* by 24.81% through VOC; and by 60.74% on NA medium and 62.22% on PDA medium through bioactive compound. Genome-mining analysis revealed that GMEKP 1 has bacilysin, surfactin, and fengycin as antifungal compounds against phytopathogen.

Keywords: Antifungal activity, *Bacillus velezensis* GMEKP 1, Bioactive compound, Fusarium oxysporum, genome-mining.