

INTISARI

Penyakit tidak menular (PTM) dan penyakit akibat infeksi bakteri masih banyak dijumpai pada populasi manusia. Hal ini menjadi tantangan dalam bidang riset dan penemuan obat, khususnya melalui pendekatan bahan alam. *Coriandrum sativum* L. (Apiaceae) atau ketumbar banyak dimanfaatkan di Indonesia dan beberapa negara lain untuk pengobatan tradisional. Penelitian terdahulu menyebutkan bahwa ketumbar memiliki berbagai potensi aktivitas farmakologi, seperti antidiabetes, antioksidan, dan antibakteri. Tujuan penyusunan naskah ini adalah untuk mengulas penelitian terdahulu terkait potensi aktivitas farmakologi ketumbar serta mekanisme molekulernya.

Database yang digunakan dalam mencari artikel adalah Scopus, PubMed, Science Direct, dan Google Scholar. Tahap seleksi artikel meliputi skrining judul, abstrak, dan isi artikel berdasarkan kesesuaian kata kunci serta kriteria inklusi dan eksklusif. Kemudian, data diekstraksi, diinterpretasi, dan dituangkan ke dalam *narrative review*.

Hasil studi menunjukkan bahwa ketumbar mampu menurunkan kadar glukosa darah melalui mekanisme penghambatan pembentukan *advanced glycation end-products* (AGEs), penghambatan aktivitas α -glukosidase, dan peningkatan regenerasi sel β pankreas. Selain itu, ketumbar menunjukkan aktivitas antioksidan melalui mekanisme reaksi *hydrogen atom transfer* (HAT), ditandai dengan peningkatan kadar enzim-enzim antioksidan dan penurunan lipid peroksidase. Ketumbar juga dapat mencegah progresivitas penyakit terkait stress oksidatif. Adapun aktivitas antibakteri terjadi melalui perubahan metabolisme respirasi sel bakteri yang mengakibatkan tidak terbentuknya ATP dan NADH dan berujung pada kematian sel. Linalool telah menunjukkan aktivitas antidiabetes dan antibakteri. Katekin dan turunannya telah menunjukkan aktivitas antioksidan. Namun belum diketahui mekanisme molekuler linalool dalam menghambat diabetes mellitus dan katekin dalam menghambat pembentukan radikal bebas atau ROS endogen. Maka perlu dilakukan penelitian lebih lanjut terkait hal tersebut.

Kata kunci: *Coriandrum sativum* L., ketumbar, aktivitas farmakologi, mekanisme molekuler, antidiabetes, antioksidan, antibakteri, glikemia, hiperglikemia, antihiperglikemia, hipoglikemi, insulin, linalool, katekin

ABSTRACT

The incidence of non-infectious disease and bacterial infection disease are still commonly found among humans. These situation becomes a challenge for drug research and discovery, especially from the natural resources approach. *Coriandrum sativum* L. (Apiaceae) or coriander is commonly used in Indonesia and some other countries for traditional medicine. Previous research found that ketumbar is potential in terms of its pharmacological activity, such as anti-diabetes, antioxidant, and antibacterial. This research aims to review previous research on potential pharmacology activity in coriander and its molecular mechanisms.

Databases used in the articles search were Scopus, PubMed, Science Direct, and Google Scholar. Article selection steps were title, abstract, and content screening based on keywords, inclusion, and exclusion criterias. Collected data were extracted, interpreted, and written into the narrative review.

Studies showed that ketumbar could lower blood glucose level through the inhibition mechanism of advanced glycation end-products (AGEs) formation, α -glucosidase activity, and the improvement of β pancreas cell regeneration. Coriander also showed antioxidant activity through the hydrogen atom transfer (HAT) reaction mechanism, marked by the increased level of the antioxidant enzymes and the decreased lipid peroxidation. It is also found that coriander could prevent disease progressivity related to oxidative stress. The antibacterial activity was found through the alteration in bacterial cell respiration metabolism. Hence, ATP and NADH were not formed and causing cell death. Linalool has shown its antidiabetic and antibacterial activity. Catechin and its derivatives have shown its antioxidant activity. The molecular mechanism of linalool in inhibiting diabetes mellitus and catechin in inhibiting endogen free radical or ROS formation are still undefined. Hence, further research is required.

Keywords: *Coriandrum sativum* L., coriander, pharmacology activity, molecular mechanism, antidiabetic, antioxidant, antibacterial, glycaemia, hyperglycaemia, antihyperglycaemia, hypoglycaemia, insulin, linalool, catechin