INTISARI

HDAC2 merupakan jenis enzim histon deasetilase, yang berperan dalam mekanisme epigenetik melalui deasetilasi histon. Ekspresi *Hdac2* yang diketahui meningkat pada berbagai model *brain disorder*, menjadikan penghambatan HDAC2 sebagai target terapi yang menjanjikan. Di sisi lain, sel glia sebagai penyusun sistem saraf pusat selain neuron juga diketahui memiliki peranan dalam proses fisiologis dan patologis pada otak, termasuk *brain disorder.* Penelitian ini bertujuan mengidentifikasi pengaruh kurkumin terhadap ekspresi gen *Hdac2* dan *gliogenic genes* yaitu *Gfap, Olig1, Olig2* dan *Mbp* pada model *brain disorder.*

Penelitian dilakukan dengan metode studi pustaka, melalui pencarian artikel ilmiah pada berbagai *database,* terkait aktivitas kurkumin sebagai agen neuroprotektif dan antidepresan pada model *brain disorder*, aktivitasnya pada ekspresi *Hdac2* dan HDAC2-*related genes,* serta pada *gliogenic genes* yaitu *Gfap, Olig1, Olig2* dan *Mbp* pada level mRNA maupun protein. Sebanyak 33 artikel yang memenuhi kriteria inklusi dikaji lebih lanjut, kemudian hasilnya disajikan dalam bentuk *narrative review.*

Treatment kurkumin pada berbagai model *brain disorder* menunjukkan peningkatan fungsi kognitif, motorik, serta mengurangi kecemasan dan *depression-like behavior* pada berbagai uji neurobehavioral. Perbaikan fungsi ini selaras dengan peningkatan ekspresi *Bdnf* sebagai salah satu gen target HDAC2, peningkatan ekspresi *Olig1*, *Olig2*, dan *Mbp* sebagai marker aktivitas oligodendrosit, serta penurunan ekspresi *Gfap* sebagai marker *reactive astrosytes.*

Kata Kunci: Kurkumin, *Hdac2,* Astrosit, Oligodendrosit

ABSTRACT

HDAC2, a histone deacetylase enzyme, plays important role in the epigenetics mechanism through histone deacetylation. *Hdac2* expression is known to increase in various models of brain disorder, making HDAC2 inhibition a promising therapeutic target. On the other hand, glia cells as a constituent of central nervous system alongside neuron, are also known to have a role in the physiological and pathological processes in the brain, including brain disorder. This study aims to identify the effect of curcumin on the expression of *Hdac2* and gliogenic genes, particularly *Gfap, Olig1, Olig2* and *Mbp* on brain disorder models

The study use literature review methods, through searching scientific articles in various databases, related to the activity of curcumin as a neuroprotective and antidepressant agent in the brain disorder model, its activity on the expression of *Hdac2* and HDAC2-related genes, as well as on gliogenic genes particularly *Gfap, Olig1, Olig2* and *Mbp* at both the mRNA and protein levels. A total of 33 articles that fit the inclusion criteria were reviewed further, then the results were presented as narrative review.

Curcumin treatment in various models of brain disorder shows an increase in cognitive function, motor skills, and reduce anxiety and depression-like behavior in various neurobehavioral tests. The improvement of this function is in line with the increased expression of *Bdnf* as a gene target of HDAC2, increased expression of *Olig1*, *Olig2*, and *Mbp* as markers of oligodendrocyte activity, and decreased expression of *Gfap* as a marker of reactive astrosytes.

Keywords: Curcumin, *Hdac2,* Astrocytes, Oligodendrocytes