INTISARI

Lada putih (*Piper nigrum* L.) mengandung Piperin. Piperin dapat menghambat pelepasan histamin dari sel mast dengan jalan menghambat jalur signal yang dimediasi oleh IgE. Piperin diduga memiliki aksi antagonisme terhadap reseptor asetilkolin. Tujuan penelitian untuk mengetahui pengaruh alkaloid lada (*Piper nigrum* Linn.) secara *in vitro* terhadap kontraksi otot polos ileum dan untuk mengetahui afinitas senyawa piperin terhadap reseptor asetilkolin secara *in silico.*

Biji *Piper nigrum* Linn. di sokhletasi menggunakan pelarut etil asetat. Hasil ekstraksi diidentifikasi menggunakan KLT, uji titik lebur, *FTIR* dan spektrofotometri UV-Vis. Alkaloid lada *Piper nigrum* Linn. diuji *in vitro* dosis 1000 µM dan 5000 µM untuk melihat respon kontraksi dan relaksasi organ ileum marmut terisolasi. Uji *in silico* dilakukan untuk melihat skor *Piper nigrum* Linn. terhadap reseptor ACh menggunakan perangkat lunak *AutoDock*. Data hasil pengujian *in vitro* dianalisis menggunakan *one way ANOVA* dan LSD dengan taraf kepercayaan 95%.

Hasil identifikasi pada uji KLT menunjukkan adanya bercak coklat muda sampai kuning (positif mengandung alkaloid). Titik lebur senyawa alkaloid *Piper nigrum* Linn. adalah 122-132^{0}C (kurang murni) dan hasil uji spektrofotometri menunjukkan bahwa senyawa tersebut memiliki gugus fungsi C-H aromatik (3008,95), C=C asimetrik dan simetrik (1635,4), C=C aromatik (1581,63), -C-0-N- (1635,4), C-O (925,83), =C-O-C (1249,87) serta memiliki panjang gelombang maksimum 342,5 nm. Nilai pD2 *Piper nigrum* Linn. dosis 1000 µM dan 5000 µM adalah berturut-turut 3,89 dan 3,94. Nilai pD2 tersebut tidak beda signifikan ($p<0,05$) dalam menghambat kontraksi otot polos ileum. Alkaloid lada *Piper nigrum* Linn. mampu menghambat kontraksi ileum marmut yang diinduksi agonis asetilkolin dan memiliki skor *docking* pada reseptor ACh sebesar -6,6.

ABSTRACT

White pepper (Piper nigrum L.) containing piperine. Piperine inhibits release of histamine from mast cells (inhibiting the signaling pathway mediated by IgE) and alleged to have action an antagonism of acetylcholine receptor. The aim of this research was to know the effect of alkaloids pepper (Piper nigrum Linn.) against ileum smooth muscle contraction with in vitro study and to determine the affinity of piperine against the acetylcholine receptor with in silico study.

Seeds of Piper nigrum Linn. was extracted by soxhletation method using ethyl acetate as solvent. The results of extraction were identified by TLC, melting point test, FTIR and UV-Vis spectrophotometry. Alkaloids pepper Piper nigrum Linn. 1000 μM and 5000 μM were tested with in vitro study to see the response of contraction and relaxation of isolated guinea pig ileum organ and in silico study was be done to see the scores of Piper nigrum Linn. on ACh receptors using Autodock software. Data from in vitro study were analyzed using one-way ANOVA and LSD with confidence level at 95%.

The results of the identification of the TLC test showed a brown to yellow spot (positive alkaloid). The melting point of alkaloid Piper nigrum Linn. was 122-132^{0}C (less pure) and the result of spectrophotometric assay indicated that the compound has an aromatic CH functional group (3008.95), C = C asymmetric and symmetric (1635.4), C = C aromatic (1581.63), - C-0-N- (1635.4), CO (925.83), = COC (1249.87) and has a maximum wavelength at 342.5 nm. The value pD2 of Piper nigrum Linn. dosage 1000 μM and 5000 μM are respectively 3.89 and 3.94. The pD2 value did not differ significantly ($p<0.05$) in inhibiting contraction of ileum smooth muscle. An alkaloid pepper Piper nigrum Linn. can inhibit the contraction of guinea pig ileum which was induced by acetylcholine agonists and this alkaloid has a score of docking on ACh receptors at -6.6.

Keywords: ACh receptors, alkaloid pepper, ileum, in silico, piperine, Piper nigrum L,