

INTISARI

Piperin senyawa dalam lada (*Piper nigrum* L.) memiliki aktifitas antagonis non kompetitif terhadap reseptor β_2 -adrenergik yang ditandai dengan nilai Emaks yang dicapai kurang dari 100% pada dosis 10 dan 50 μM . Penelitian ini bertujuan untuk mengevaluasi efek reversibilitas interaksi piperin terhadap reseptor β_2 -adrenergik.

Penelitian ini menggunakan metode percobaan organ terisolasi. Uji reversibilitas dilakukan setelah perlakuan piperin (10 dan 50 μM) terhadap kontraksi otot polos aorta marmut terisolasi yang diinduksi oleh agonis (seri adrenalin). Otot polos aorta dicuci selama 30 menit dengan penggantian larutan buffer krebs setiap lima menit, setelah dicapai kondisi yang stabil, selanjutnya dilakukan pengukuran kontraksi kembali dengan pemberian konsentrasi bertingkat adrenalin (10^{-8} - 10^{-3}) M. Data disajikan dalam bentuk nilai pD_2 yang diperoleh dari kurva hubungan negatif logaritma konsentrasi agonis yang menghasilkan setengah respon kontraksi maksimal.

Hasil penelitian menunjukkan bahwa interaksi piperin terhadap reseptor β_2 -adrenergik otot polos aorta bersifat irreversibel. Hasil analisis statistik menggunakan *One-way Anova* dan dilanjutkan dengan *post-hoc test* LSD dengan taraf kepercayaan 95% menyimpulkan bahwa nilai pD_2 adrenalin sebelum dan sesudah perlakuan piperin berbeda signifikan ($p < 0,05$).

Kata Kunci : piperin, *invitro*, isolasi organ, uji reversibilitas, reseptor β_2 -adrenergik.

ABSTRACT

Piperine, a compound found in a pepper (*Piper nigrum* L), has a non-competitive antagonistic activity against the β_2 -adrenergic receptor characterized by an obtained value which is less than 100% at doses 10 and 50 μM . This study aimed to evaluate the piperine reversibility interaction effect on β_2 -adrenergic receptor.

The study used an isolated organ method. The reversibility test was conducted after performing the piperine treatment (10 μM and 50 μM) towards the smooth muscle contraction of isolated marmot aorta that was induced by the agonist (adrenaline series). The aorta smooth muscle was washed for 30 minutes while the buffer krebs solution was replaced every 5 minutes. After the stable condition was obtained, the contraction measurement was reconducted by giving an adrenaline concentration level (10^{-8} - 10^{-3}) M. The data were displayed in the form of pD_2 value obtained from the negative correlation of logarithmic agonist concentration resulting a half response of maximum contraction.

The results showed that piperine interaction towards β_2 -adrenergic receptor of aorta smooth muscle was irreversible. The data were analyzed statistically using One-way Anova, and post-hoc LSD test which 95% confidence level of it concluded that adrenalin pD_2 value, before and after the piperin treatment, was significantly different ($p < 0.05$).

Keywords: *piperine, invitro, an isolated organ, reversibility test, β_2 -adrenergic receptor.*