

**PENGARUH KEJU SINBIOTIK TERHADAP EKSPRESI GEN DAN
KADAR PROTEIN *Intercellular Cell Adhesion Molecule-1 (ICAM-1)*
LAMBUNG TIKUS YANG TERPAPAR INDOMETASIN**

INTISARI

Latar belakang : Peningkatan ekspresi *Intercellular Cell Adhesion Molecule-1 (ICAM-1)* terlibat dalam patogenesis kerusakan lambung akibat penggunaan indometasin. Penekanan ekspresi ICAM-1 dapat mencegah kerusakan lambung akibat penggunaan indometasin. Keju sinbiotik merupakan sumber peptida bioaktif yang diperkaya dengan bakteri starter *Lactobacillus rhamnosus* dan penambahan glukomanan porang berpotensi sebagai pangan fungsional yang memiliki aktivitas anti-inflamasi

Tujuan : Penelitian ini bertujuan untuk mengetahui pengaruh keju sinbiotik terhadap ekspresi gen dan kadar protein ICAM-1 lambung tikus yang terpapar indometasin.

Metode: Penelitian menggunakan tikus jantan galur Wistar yang dikelompokkan kedalam 6 kelompok perlakuan: normal (N), Indometasin (IND): Keju Probiotik (KP), Keju sinbiotik 0,36g/hari (KS I), Keju sinbiotik 0,72 g/hari (KS II) dan Keju sinbiotik 1,44 g/hari (KS III). Pemberian keju sinbiotik atau keju probiotik pada kelompok KS dan KP dilakukan selama 28 hari sedangkan kelompok N dan IND diberi air desilat. Lambung tikus diberi paparan indometasin dengan dosis 20 mg/kg BB pada hari ke 29 dan dikorbankan 24 jam berikutnya. Tingkat ekspresi gen dan kadar protein ICAM-1 lambung ditentukan menggunakan *real-time* PCR dan teknik ELISA.

Hasil : Paparan indometasin menyebabkan peningkatan ekspresi gen dan protein ICAM-1 yang signifikan ($p < 0,05$) pada kelompok indometasin. Pemberian keju sinbiotik selama 28 hari sebelum paparan indometasin dapat mencegah peningkatan ekspresi gen dan kadar protein ICAM-1 lambung tikus. Ekspresi gen ICAM-1 dapat ditekan secara signifikan ($p < 0,05$) oleh keju sinbiotik dengan dosis 0,36g/hari dan 0,72 g/hari, sedangkan penekanan kadar protein ICAM-1 yang signifikan ($p < 0,05$) hanya terdapat pada kelompok yang menerima keju sinbiotik dengan dosis 0,72 g/hari.

Kesimpulan : Keju sinbiotik dengan dosis 0,72 g/hari mampu menekan peningkatan ekspresi gen dan kadar protein ICAM-1 lambung tikus yang terpapar indometasin.

Kata kunci : Ekspresi gen ICAM-1, kadar protein ICAM-1, keju sinbiotik, indometasin

EFFECT OF SYNBIOTIC CHEESE ON GENE EXPRESSION AND PROTEIN LEVELS OF *Intercellular Cell Adhesion Molecule-1 (ICAM-1)* ON INDOMETHACIN EXPOSED IN RAT GASTRIC

ABSTRACT

Background : Up-regulation of Intercellular Cell Adhesion Molecule -1 (ICAM-1) was involved in pathogenesis of indomethacin-induced gastric injury. Down-regulation ICAM-1 could be an alternative to prevent indomethacin-induced gastric injury. Synbiotic cheese is a source of milk-bioactive peptide and was enriched with bacteria starter *Lactobacillus rhamnosus* and additional of porang glucomannan which potent as functional food with anti-inflammatory properties.

Objectives : This study aimed to determine the effect of synbiotic cheese on gene expression and protein levels of ICAM-1 on exposed of indomethacin in rat gastric

Methods : The study used male Wistar rats grouped into 6 treatment groups: normal (N), Indomethacin (IND), Probiotic cheese (KP), Synbiotic cheese 0,36 g/day (KS I), synbiotic cheese 0,72 g/day (KS II) and Synbiotic cheese 1,44 g/day (KS III). KS dan KP group was pre-treatment with synbiotic cheese or probiotic cheese for 28 days, while N and IND group received distillate water only. Rats gastric exposed to indomethacin on 29th day using 20 mg/kg bw indomethacin. Rats were euthanized 24 hours after indomethacin treatment and then the gastric tissue was took. Relative ICAM-1 gene epressions were quantified using real-time PCR, while the protein levels of ICAM-1 were quantified using ELISA technique.

Result : Indomethacin induced significantly ($p < 0,05$) both in gene expression and protein levels of ICAM-1 in gastric tissue. Pre-treatment with synbiotic cheese for 28 days showed suppression effect on ICAM-1 expression that significantly different to indomethacin group. Synbiotic cheese at dose 0,36 g/day showed significant suppression effect on ICAM-1 gene expression, but no significant suppression in protein levels of ICAM-1. Synbiotic cheese at dose 0,72 g/day showed significant suppression effect on ICAM-1 expression, both in gene expression and protein levels of ICAM-1. Both gen expression and protein levels of ICAM-1 in synbiotic cheese group was lower than probiotic cheese groups, but it was not statistically different ($p > 0,05$).

Conclusion: Synbiotic cheese at dose 0,72 g/day dose suppressed up-regulation both gene expression dan protein levels of ICAM-1 on indomethacin exposed in rat gastric

Keyword: ICAM-1 gene expression, protein levels of ICAM-1, Synbiotic cheese, Indomethacin