Efek pemberian ekstrak etanol biji delima (punica granatum) terhadap penghambatan pertumbuhan dan ekspresi protein inducible nitric oxide synthase (iNOS) sel kanker kolorektal HCT116 = Efek pemberian ekstrak etanol biji delima (punica granatum) terhadap penghambatan pertumbuhan dan ekspresi protein inducible nitric oxide synthase (iNOS) sel kanker kolorektal HCT116

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Abstrak

Pendahuluan. Mortalitas akibat kanker kolorektal di Indonesia sebesar 9,5% dari seluruh kasus kanker. Pasien kanker kolorektal dengan ekspresi iNOS yang tinggi diketahui memiliki prognosis yang buruk. Sampai saat ini diketahui terdapat dua specific drug therapy dengan target EGFR dan VEGF yang dapat digunakan pada pasien kanker kolorektal. Akan tetapi, kedua obat tersebut masih terbatas penggunaannya serta menimbulkan efek samping. Delima (Punica granatum) diketahui sebagai tanaman herbal yang memiliki aktivitas antioksidan, antiinflamasi, dan antikanker. Beberapa penelitian telah menguji efek delima terhadap kanker. Akan tetapi, penelitian mengenai efek biji delima terhadap kanker masih minim. Metode. Aktivitas antikanker ekstrak etanol Punica granatum secara in vitro diuji menggunakan metode MTT assay pada cell line kanker kolorektal HCT116. Terdapat delapan serial konsentrasi yang diuji melalui MTT assay. Efek ekstrak etanol Punica granatum terhadap ekspresi protein iNOS pada cell line kanker kolorektal HCT116 dinilai melalui penghitungan nilai H-score dari pewarnaan imunositokimia. Terdapat empat kelompok perlakuan; kontrol negatif (0 ppm), dosis kecil (50 ppm), dosis sedang (100 ppm), kelompok dosis besar (200 ppm). Tiga konsentrasi dengan persentase inhibisi terbesar dari hasil MTT assay digunakan sebagai dosis esktrak pada imunositokimia. Hasil. Ekstrak etanol biji delima (Punica granatum) menunjukkan aktivitas antikanker
melalui penghambatan pertumbuhan sel kanker kolorektal HCT116 dengan nilai IC50 sebesar 54,2763 g/ml. Penurunan ekspresi protein iNOS dengan rerata nilai H-score sebesar 158,48 terjadi setelah diberikan ekstrak dengan dosis 200 ppm.
Kesimpulan. Penelitian ini membuktikan bahwa biji delima (Punica granatum) menghambat pertumbuhan serta menurunkan ekspresi protein iNOS kanker kolorektal.

Preliminary. Mortality due to colorectal cancer in Indonesia is 9.5% of all cancer cases. Colorectal cancer patients with high iNOS expression are known to have a poor prognosis. Until now, it is known that there are two specific drug therapies targeting EGFR and VEGF that can be used in colorectal cancer patients. However, both drugs are still limited in their use and cause side effects. Pomegranate (Punica granatum) is known as an herbal plant that has antioxidant, anti-inflammatory, and anticancer activities. Several studies have tested the effects of pomegranate on cancer. However, research on the effects of pomegranate seeds on cancer is still minimal. Method. The anticancer activity of the ethanolic extract of Punica granatum was tested in vitro using the MTT assay method on the HCT116 colorectal cancer cell line. There are eight concentration series tested by MTT assay. The effect of Punica granatum ethanol extract on iNOS protein

expression in the HCT116 colorectal cancer cell line was assessed by calculating the H-score value from immunocytochemical staining. There is
four treatment groups; negative control (0 ppm), small dose (50 ppm), medium dose (100 ppm), large dose group (200 ppm). The three concentrations with the largest percentage of inhibition from the MTT assay were used as extract doses for immunocytochemistry. Results. Pomegranate (Punica granatum) seed ethanol extract exhibits anticancer activity
by inhibiting the growth of HCT116 colorectal cancer cells with an IC50 value of 54.2763 g/ml. The decrease in iNOS protein expression with an average H-score of 158.48 occurred after the extract was given at a dose of 200 ppm.
Conclusion. This study proved that pomegranate seeds (Punica granatum) inhibited growth and decreased the expression of colorectal cancer iNOS protein.