

Aktivitas Sitotoksik Senyawa Turunan Asam Galat pada Sel Kanker Kolon HCT116 = The Cytotoxic Activity of Gallic Acid Derivatives in HCT116 Colon Cancer Cell

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Abstrak

[Asam galat merupakan zat polifenol dengan kemampuan sitotoksik. Studi sebelumnya menunjukkan turunan asam galat mampu menghambat pertumbuhan sel kanker. Sampai saat ini, belum banyak studi yang mempelajari turunan alkil ester galat dan turunan metoksi galat terhadap pertumbuhan kanker kolon. Tujuan dari penelitian ini adalah untuk mengetahui aktivitas sitotoksik turunan alkil ester galat dan metoksi galat pada sel kanker kolon. Penelitian ini dilakukan dengan desain eksperimental secara in vitro. Kemampuan sitotoksik asam galat dan turunannya diuji pada sel HCT116 (sel kanker kolon) dengan menggunakan MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Data yang diperoleh dianalisis untuk mendapatkan IC₅₀ setiap senyawa. Hasil penelitian menunjukkan modifikasi asam galat menjadi senyawa metil galat, propil galat, butil galat, t-butil galat, amil galat, oktil galat dan ketiga turunan metoksi galat tidak menunjukkan peningkatan aktivitas sitotoksik dengan peningkatan konsentrasi yang diuji. Dari semua senyawa yang memiliki kecenderungan menghambat, heptil galat memiliki aktivitas yang paling baik. Disimpulkan, metil galat, propil galat, butil galat, t-butil galat, amil galat, dan oktil galat merupakan turunan alkil galat yang tidak aktif. Etil galat, isobutil galat, isoamil galat, dan heptil galat merupakan turunan alkil galat yang memiliki aktivitas sitotoksik pada sel kanker kolon. Ketiga tur;Gallic acid is a polyphenol with anticancer activity. Previous studies had shown that the derivatives of gallic acid had cytotoxic activity in cancer cell. To date, few studies evaluated the activity of alkyl ester derivatives of gallic acid and methoxy derivatives of gallic acid in colon cancer cell. The objective of this study was to examine the cytotoxic activity of alkyl ester derivatives and methoxy derivatives of gallic acid in colon cancer cell. This study was conducted in in-vitro study in HCT116 colon cancer cell. Cytotoxic activity of gallic acid and its derivatives were evaluated in HCT116 colon cancer cell using MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Data from this experiment was analyzed to obtain IC₅₀ of each compound. The result showed that modification of gallic acid to methyl gallate, propyl gallate, butyl gallat, t-butyl gallate, pentyl gallate, octyl gallate and three methoxy derivatives of gallic acid did not increase cytotoxic activity in all concentrations tested. Among all derivatives of gallic acid, heptyl gallate has the best cytotoxic activity. In conclusion, methyl gallate, propyl gallate, butyl gallate, t-butyl gallate, pentyl gallate, and octyl gallate

are alkyl ester derivatives of gallic acid with no cytotoxic activity. Ethyl gallate, isobutyl gallate, isopentyl gallate, and heptyl gallate are active derivatives of gallic acid. All methoxy derivatives of gallic acid do not show any cytotoxic activity in colon cancer cell.;Gallic acid is a polyphenol with anticancer activity. Previous studies had shown that the derivatives of gallic acid had cytotoxic activity in cancer cell. To date, few studies evaluated the activity of alkyl ester derivatives of gallic acid and methoxy derivatives of gallic acid in colon cancer cell. The objective of this study was to examine the cytotoxic activity of alkyl ester derivatives and methoxy derivatives of gallic acid in colon cancer cell. This study was conducted in in-vitro study in HCT116 colon cancer cell. Cytotoxic activity of gallic acid and its derivatives were evaluated in HCT116 colon cancer cell using MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Data from this experiment was analyzed to obtain IC50 of each compound. The result showed that modification of gallic acid to methyl gallate, propyl gallate, butyl gallat, t-butyl gallate, pentyl gallate, octyl gallate and three methoxy derivatives of gallic acid did not increase cytotoxic activity in all concentrations tested. Among all derivatives of gallic acid, heptyl gallate has the best cytotoxic activity. In conclusion, methyl gallate, propyl gallate, butyl gallate, t-butyl gallate, pentyl gallate, and octyl gallate are alkyl ester derivatives of gallic acid with no cytotoxic activity. Ethyl gallate, isobutyl gallate, isopentyl gallate, and heptyl gallate are active derivatives of gallic acid. All methoxy derivatives of gallic acid do not show any cytotoxic activity in colon cancer cell., Gallic acid is a polyphenol with anticancer activity. Previous studies had shown that the derivatives of gallic acid had cytotoxic activity in cancer cell. To date, few studies evaluated the activity of alkyl ester derivatives of gallic acid and methoxy derivatives of gallic acid in colon cancer cell. The objective of this study was to examine the cytotoxic activity of alkyl ester derivatives and methoxy derivatives of gallic acid in colon cancer cell. This study was conducted in in-vitro study in HCT116 colon cancer cell. Cytotoxic activity of gallic acid and its derivatives were evaluated in HCT116 colon cancer cell using MTS (3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium) assay. Data from this experiment was analyzed to obtain IC50 of each compound. The result showed that modification of gallic acid to methyl gallate, propyl gallate, butyl gallat, t-butyl gallate, pentyl gallate, octyl gallate and three methoxy derivatives of gallic acid did not increase cytotoxic activity in all concentrations tested. Among all derivatives of gallic acid, heptyl gallate has the best cytotoxic activity. In conclusion, methyl gallate, propyl gallate, butyl gallate, t-butyl gallate, pentyl gallate, and octyl gallate are alkyl ester derivatives of gallic acid with no cytotoxic activity. Ethyl gallate, isobutyl gallate, isopentyl gallate, and heptyl gallate are active derivatives of gallic acid. All methoxy derivatives of gallic acid do not show any cytotoxic activity in colon cancer cell.]