

# Analisis fitokimia dan pengaruh ekstrak makroalga *Gracilaria verrucosa* terhadap pertumbuhan sel kanker kolorektal HCT 116 = Pytochemical analysis and effect of macroalgae *Gracilaria verrucosa* extract against growth of colorectal cancer HCT 116 cells

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## Abstrak

Kanker kolorektal merupakan suatu tumor ganas yang menyerang kolon dan menjadi penyebab kematian terbanyak kedua di Indonesia. Sementara, hingga saat ini, belum ada pengobatan yang efektif. Makroalga *Gracilaria verrucosa* merupakan salah satu spesies yang belum banyak diteliti, tetapi diduga memiliki efek sitotoksik dan antioksidan. Penelitian terhadap *Gracilaria verrucosa* ini bertujuan untuk mengetahui efek sitotoksik yang dimiliki pada sel line kanker HCT 116. Penelitian dilakukan dengan ekstraksi makroalga menggunakan pelarut etanol, kloroform, etil asetat, dan n-heksana setelah sebelumnya makroalga diuji kandungan metabolit sekundernya melalui uji fitokimia. Kemudian, 20 L dari setiap ekstrak dimasukkan ke sel HCT 116 yang sebelumnya sudah dicampurkan 100 L DMEM dan diinkubasi selama 24 jam. Setiap sampel kemudian diencerkan secara triplo dalam 8 konsentrasi yaitu 1,5625 g/ml; 3,125 g/ml; 6,25 g/ml; 12,5 g/ml; 25 g/ml; 50 g/ml; 100 g/ml; dan 200 g/ml. Selanjutnya, setiap sampel yang sudah diinkubasi selama 24 jam diujikan aktivitas antikankernya sebagai penghambat pertumbuhan sel kanker kolorektal HCT-116 menggunakan metode MTT assay pada panjang gelombang 490 nm. Data yang diperoleh kemudian dianalisis untuk menghasilkan nilai IC50. Hasil penelitian menunjukkan bahwa keempat ekstrak menunjukkan penghambatan terhadap pertumbuhan sel kanker HCT-116 dengan nilai IC50.

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Colorectal cancer is one of malignant tumors that occurs in colon area. This cancer has become the second killer in Indonesia, after lung cancer. Up until now, there is no effective cure. Macroalgae *Gracilaria verrucosa* is one of *Gracilaria* species which has been identified, but is supposed to have anti cytotoxic and anti oxidant effect. This experiment uses *Gracilaria verrucosa* to identify the cytotoxic effect towards HCT 116 cancer cell. The experiment has extracted *Gracilaria verrucosa* into four different solvents alkocol, chloroform, ethyl acetate, and n n heksanae. Before extraction, macroalgae was used for phytochemical test in order to identify the secondary metabolit contained in *Gracilaria verrucosa*. Aftreer extracton, 20 L of the extract then was put into HCT 116 cells which has been mixed with 1 00 L DMEM and incubated for 24 hours. Every sample, afterwards, mixed as triplo in eight concentrations 1,5625 g ml 3,125 g ml 6,25 g ml 12,5 g ml 25 g ml 50 g ml 100 g ml and 200 g ml. Sample extract which has been incubated for 24 hours then was analyzed using MTT assay with 490nm wavelength to identify the anti cancer activity as inhibitor of colorectal cancer HCT 116 cells. Data collected from the experiment would be analyzed so that the researcher can know IC50 value. The result of experiment shows that all of the extract can be used as growth inhibitor of HCT 116 colorectal cancer cells with IC50 value below 100. Meanwhile, the ethanol extract of *Gracilaria verrucosa* has been proved as the best growth inhibitor due to its lowest IC50 value. From the data, it has been concluded that *Gracilaria verrucosa* extract has a potential use as a new anti colorectal ancer agent of HCT 116 cells. Keywords phytochemical analysis, *Gracilaria verrucosa*, cytotoxic effect, colorectal cancer HCT 116 cells