

## AKTIVITAS SITOTOKSIK DAN INDUKSI APOPTOSIS PROTEIN KERANG DARAH

### (*Anadara (Tegillarca) granosa*, *Linnaeus 1758*) TERHADAP SEL T47D (*BREAST CANCER CELL LINE*)

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#### INTISARI

Produk obat-obatan berasal dari bahan alami sudah mulai banyak dikembangkan, salah satu pemanfaatan bahan alami yaitu kerang darah (*Tegillarca granosa*). Kerang darah mengandung protein dengan berat molekul 20 KDa yang diketahui potensial menghambat pertumbuhan sel HT-29. Penelitian ini bertujuan untuk mengetahui aktivitas sitotoksik dan induksi apoptosis *crude* protein kerang darah terhadap sel line kanker payudara (T47D). *Anadara (Tegillarca) granosa* masuk dalam *Family* Arcidae dengan ciri morfologi yaitu memiliki dua bekas otot perlekatan pada kedua sisi dalam cangkang yang dihubungkan melalui *palial line* tanpa ada *palial sinus*. *Anadara (Tegillarca) granosa* memiliki jumlah rusuk spesifik di bagian dorsal cangkang berjumlah 15 – 21 buah. Penelitian ini menggunakan metode presipitasi ammonium sulfat untuk isolasi *crude* protein kerang darah. Metode *MTT-Assay* dikerjakan untuk mengetahui sitotoksisitas dan mengetahui nilai IC<sub>50</sub>, uji apoptosis secara kualitatif dan kuantitatif dikerjakan berturut-turut dengan *double-staining* menggunakan pewarna *ethidium bromide* dan *acridine orange* serta *flow cytometri* menggunakan pewarna *anexin-V* dan *propodium iodide*. *Crude* protein kerang darah mempunyai nilai IC<sub>50</sub> 11,11µg/ml dan mampu menginduksi apoptosis sel line kanker payudara (T47D) pada konsentrasi 15 µg/ml dengan metode *double-staining*, tetapi perhitungan dengan metode *flow cytometri* masih menunjukkan hasil yang berbeda pada penelitian ini. Hasil penelitian ini menunjukkan bahwa *crude* protein kerang darah bersifat sitotoksik dan dapat menginduksi apoptosis pada sel line kanker payudara (T47D).

Kata kunci : T47D, *Anadara (Tegillarca) granosa*, *MTT-assays*, *double staining*, *flow cytometri*.

# CYTOTOXIC ACTIVITY AND APOPTOTIC INDUCTION OF PROTEIN ISOLATED FROM BLOOD CLAM (*Anadara (Tegillarca) granosa*, Linnaeus 1758) AGAINST BREAST CANCER T47D CELL LINE

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## Abstract

Medical products which derived from natural resources such blood clam (*Anadara (Tegillarca) granosa*) have been already developed. Crude protein extracted from blood clam contains a 20 KDa protein which had been known be able to inhibit growth of HT-29 cell line. The objective of this study was to determinate cytotoxic activity and apoptotic effect of crude protein which isolated from blood clam against breast cancer T47D cell line. *Anadara (Tegillarca) granosa* come under Family Arcidae cause have two ex-adductor muscle is linked by palial line without palial sinus. *Anadara (Tegillarca) granosa* have spesific ribs in dorsal of shell between 15 – 21. This study used the ammonium sulphate precipitation method for the isolation crude protein of blood clams. MTT-Assay method was performed to determine cytotoxicity and to know the value of IC<sub>50</sub>, apoptosis test qualitatively and quantitatively was done by double-staining using ethidium bromide and acridine orange as well as flow cytometric dye using annexin-V and propodium iodide dyes. Crude protein clams of blood have IC<sub>50</sub> value 11.11 µg/ml and able to induce apoptosis of breast cancer cell line (T47D) at 15 µg/ml concentration by double-staining method, but the calculation with flow cytometry method still shows different results in this study. The results of this study indicated that crude protein clams are cytotoxic and can induce apoptosis in breast cancer cell line (T47D).

Keyword: *Anadara (Tegillarca) granosa*, MTT-Assay, Double-staining, Flowcytometry