

## INTISARI

Kurkumin dan Pentagamavunon-0 (PGV-0) telah diketahui memiliki efek antikanker, namun keduanya memiliki kelarutan dalam air yang rendah sehingga bioavailabilitas dalam tubuhnya juga rendah. Untuk mengatasi keterbatasan tersebut, dibuatlah formulasi *Self-Nano Emulsifying Drug Delivery System* (SNEDDS) kurkumin dan PGV-0. Penelitian ini bertujuan untuk mengkaji efek sitotoksik dari senyawa kurkumin dan PGV-0 dalam formulasi SNEDDS pada sel kanker payudara T47D. Selain itu, dilihat pula aktivitas sitotoksiknya pada sel normal Vero.

Uji sitotoksik yang dilakukan menggunakan metode *MTT Assay*. Sel yang telah diberi perlakuan dengan larutan uji diinkubasi selama 24 jam, kemudian ditambahkan reagen MTT dan dilakukan pembacaan absorbansi dari sel hidup. Data yang didapat kemudian dianalisis menggunakan regresi linier. Hasil analisis digunakan untuk menggambarkan pengaruh konsentrasi senyawa uji terhadap viabilitas sel, kemudian dapat dilakukan perhitungan  $IC_{50}$ .

Hasil penelitian ini menunjukkan bahwa pada sel T47D perlakuan SNEDDS kurkumin ( $4,89 \pm 0,16 \mu\text{g/mL}$ ) dan SNEDDS PGV-0 ( $6,88 \pm 2,35 \mu\text{g/mL}$ ) memiliki nilai  $IC_{50}$  yang lebih rendah daripada non SNEDDS kurkumin ( $28,98 \pm 4,35 \mu\text{g/mL}$ ) dan non SNEDDS PGV-0 ( $18,78 \pm 5,93 \mu\text{g/mL}$ ). Hal tersebut juga terjadi pada sel Vero, nilai  $IC_{50}$  pada perlakuan SNEDDS kurkumin ( $2,39 \mu\text{g/mL}$ ) dan PGV-0 ( $5,73 \mu\text{g/mL}$ ) lebih rendah daripada non SNEDDS kurkumin ( $29,73 \mu\text{g/mL}$ ) dan PGV-0 ( $12,44 \mu\text{g/mL}$ ). Akan tetapi, bahan pembawa SNEDDS juga memiliki efek toksik ( $IC_{50}$  sel T47D =  $5,40 \mu\text{g/mL}$ , sel Vero =  $4,66 \mu\text{g/mL}$ ) sehingga kemungkinan penurunan nilai  $IC_{50}$  disebabkan oleh bahan pembawa SNEDDS tersebut.

*Kata kunci : sitotoksik, SNEDDS, kurkumin, PGV-0, sel T47D, sel Vero*

## ABSTRACT

Curcumin and Pentagamavunon-0 (PGV-0) have been known to have anticancer effects, but both of them have a low solubility in water so the bioavailabilities in the body are also low. To overcome these limitations, we invented formulation Self Nano Emulsifying Drug Delivery System (SNEDDS) of curcumin and PGV-0. This study aims to assess the cytotoxic effects of the curcumin and PGV-0 in the formulation SNEDDS on breast cancer cells T47D. In addition, we also view the cytotoxic activity in normal cells Vero.

Cytotoxic test were performed using MTT Assay method. Cells that had been treated with the test solution were incubated for 24 hours, then MTT reagent was added and absorbance readings made from living cells. The data obtained were analyzed using linear regression. The results of the analysis were used to describe the effect of the concentration of the test compound on the viability of the cells, and then we did the calculation of  $IC_{50}$  value.

The results showed that in T47D cells, treatment of SNEDDS curcumin ( $4.89 \pm 0,16 \mu\text{g} / \text{mL}$ ) and SNEDDS PGV-0 ( $6.88 \pm 2.35 \mu\text{g}/\text{mL}$ ) had a lower  $IC_{50}$  than non SNEDDS curcumin ( $28.98 \pm 4,35 \mu\text{g}/\text{mL}$ ) and non SNEDDS PGV-0 ( $18.78 \pm 5.93 \mu\text{g}/\text{mL}$ ). It also occurs in Vero cells, the  $IC_{50}$  value of SNEDDS curcumin treatment ( $2.39 \mu\text{g}/\text{mL}$ ) and PGV-0 treatment ( $5.73 \mu\text{g}/\text{mL}$ ) were lower than the non SNEDDS curcumin ( $29.73 \mu\text{g}/\text{mL}$ ) and non SNEDDS PGV -0 ( $12.44 \mu\text{g}/\text{mL}$ ). However, the material carrier of SNEDDS also had toxic effects ( $IC_{50}$  value in T47D cells =  $5.40 \mu\text{g}/\text{mL}$ , Vero cells =  $4.66 \mu\text{g}/\text{mL}$ ) so that the possible reduction in  $IC_{50}$  values are caused by the material carrier of SNEDDS.

*Keywords: cytotoxic, SNEDDS, curcumin, PGV-0, T47D cells, Vero cells*