# PRODUKSI *NITRIC OXIDE* DAN AKTIVITAS FAGOSITOSIS MAKROFAG MENCIT OLEH EKSTRAK METANOLIK BUAH NAGA MERAH (*Hylocereus polyrhizus* (F.A.C. Weber) Britton & Rose)

Ainanur Luthfiana
(08/267842/BI/08195)

## INTISARI

Buah naga merah dikenal sebagai agen terapeutik tradisional. Buah ini menunjukkan aktivitas antioksidan, anti-inflamasi, kardioprotektif, antikanker; diduga berasal dari kandungan senyawa bioaktifnya. Minimnya kajian ilmiah tentang potensi imunomodulator buah naga merah secara *in vitro* menjadikan penelitian ini perlu dilakukan. Penelitian ini bertujuan untuk mempelajari sitotoksisitas, aktivitas fagositosis dan produksi *nitric oxide* makrofag yang diinduksi ekstrak metanolik buah naga merah. Seri konsentrasi ekstrak yang digunakan 10, 100, dan 1000 µg/mL. Makrofag peritoneal mencit diisolasi dan dikultur secara *in vitro* sesuai kepadatan sel per volume yang dibutuhkan untuk tiap uji. Uji sitotoksik dilakukan dengan menginkubasi makrofag, pemberian ekstrak, reagen *WST-1* dan diukur secara spektrofotometri dalam *96-wells plate*. Uji fagositosis *latex beads* dilakukan dengan menginkubasi makrofag, pemberian ekstrak, *latex beads* dalam *24-wells plate* berisi *coverslips* lalu diamati di bawah mikroskop. *Nitric oxide assay* dilakukan dengan menginkubasi medium kultur makrofag yang diambil dari uji fagositosis dan reagen Griess dalam *96-wells plate* lalu diukur secara spektrofotometri. Parameter kualitas makrofag yang diamati meliputi penghambatan proliferasi sel, viabilitas, morfologi, kadar *nitric oxide*, aktivitas dan indeks fagositosis. Hasil penelitian menunjukkan ekstrak metanolik buah naga merah tidak toksik terhadap sel makrofag. Terdapat peningkatan aktivitas fagositosis dan penurunan konsentrasi *nitric oxide* seiring dengan peningkatan konsentrasi ekstrak. Kesimpulan penelitian ini adalah ekstrak metanolik buah naga merah berpotensi sebagai agen imunomodulator.

Kata kunci : *nitric oxide*, fagositosis, makrofag, *Hylocereus polyrhizus* (F.A.C. Weber) Britton & Rose, imunomodulator.

# NITRIC OXIDE PRODUCTION AND PHAGOCYTIC ACTIVITY OF MOUSE MACROPHAGES BY RED DRAGON FRUITS' METHANOLIC EXTRACTS (*Hylocereus polyrhizus* (F.A.C. Weber) Britton & Rose)

Ainanur Luthfiana
(08/267842/BI/08195)

## ABSTRACT

Red dragon fruits are known as traditional therapeutic agents. It has been shown antioxidant, anti-inflammation**,** cardioprotective, anticancer activity, presumably originated by its bioactive compounds. A limited scientific studies of red dragon fruits' immunomodulator potential in vitro allowing this research needed to do. The objectives of this study were to investigate cytotoxicity, phagocytic activity and nitric oxide production of macrophages induced by red dragon fruits' methanolic extracts. Concentrations series used were 10, 100, and 1000 µg/mL. Mice peritoneal macrophages were isolated and cultured in vitro based on cell density per volume needed for each assay. Cytotoxic assay was performed by incubating macrophages, extracts treatment, WST-1 reagents and measured spectrophotometrically on a 96-wells plate. Latex beads phagocytic test was conducted by incubating macrophages, extracts treatment, latex beads on coverslips-filled 24-wells plate then observed under microscope. Nitric oxide assay was performed using cultured macrophage's medium taken by phagocytic test and Griess reagents on a 96-wells plate then measured spectrophotometrically. Macrophages' quality parameters include inhibition of cell proliferation, viability, morphology, nitric oxide concentrations, phagocytic activity and index. Red dragon fruits' methanolic extracts showed no cytoxicity to macrophage cells. There were an increasing trend of phagocytic activity and decreasing trend of *nitric oxide* concentrations as increased extracts' concentrations. The present study concluded that red dragon fruits' methanolic extracts may serve as potent immunomodulator agent.

Key words : nitric oxide, phagocytosis, macrophages, *Hylocereus polyrhizus* (F.A.C. Weber) Britton & Rose, immunomodulator.