

**EKSPRESI ENZIM SIKLOOKSIGENASE-2 PADA KULTUR SEL LEYDIG TIKUS SPRAGUE DAWLEY YANG DIINDUKSI OLEH ADVANCED GLYCATION END PRODUCTS 200µg/mL DAN DIBERI GAMMA-MANGOSTIN 5µM**

**Meylani Hafizhah US<sup>1</sup>, Dicky Moch Rizal<sup>2</sup>, Rustamaji<sup>3</sup>**

<sup>1</sup>Program Studi Pendidikan Dokter FK UGM

<sup>2</sup>Departemen Fisiologi FK UGM

<sup>3</sup>Departemen Farmakologi dan Terapi FK UGM

**INTISARI**

**Latar Belakang:** *Advanced Glycation End Products* merupakan produk glikasi, menyebabkan kerusakan sel melalui peningkatan stress oksidatif dan inflamasi dengan menginduksi ekspresi enzim siklooksigenase-2. Salah satu sel yang terkena dampak AGE adalah sel Leydig, merupakan sel besar, poligonal, dan terletak di interstisial testis. Salah satu *xanthone* dalam kulit manggis, *gamma-mangostin*, memiliki efek antiinflamasi dengan menginhibisi ekspresi enzim siklooksigenase-2 pada berbagai macam sel sehingga menghambat efek kerusakan yang ditimbulkan AGE.

**Tujuan Penelitian:** mengamati ekspresi enzim siklooksigenase-2 pada kultur sel Leydig tikus *Sprague Dawley* yang diinduksi AGE dan diberi *gamma-mangostin* sebagai agen antiinflamasi.

**Metode:** Data sekunder dengan desain penelitian eksperimental murni tentang ekspresi enzim siklooksigenase-2 pada kultur sel Leydig tikus *Sprague Dawley* yang diinduksi AGE 200µg/mL dan diberi *gamma-mangostin* 5µM dibandingkan dengan yang tidak diberi *gamma-mangostin*. Analisis data menggunakan *software SPSS statistics 19.0* dan uji *one way ANOVA* untuk mengetahui kebermaknaannya.

**Hasil:** Secara statistik, tidak terdapat perbedaan bermakna ( $p=0,263$ ) antara ekspresi enzim siklooksigenase-2 pada kultur sel Leydig yang hanya diinduksi AGE 200µg/mL (10,03 ng/10<sup>5</sup> sel/24 jam) dan yang diinduksi AGE serta diberi *gamma-mangostin* 5µM (9,08 ng/10<sup>5</sup> sel/24 jam).

**Kesimpulan:** Ekspresi enzim siklooksigenase-2 pada kultur sel Leydig yang diinduksi AGE 200µg/mL memiliki rerata lebih tinggi daripada yang tidak diberi. Pemberian *gamma-mangostin* 5µM menurunkan ekspresi enzim siklooksigenase-2 pada kultur sel Leydig yang diinduksi

AGE, tetapi hasil tersebut tidak signifikan secara statistik. Rerata ekspresi siklooksigenase-2 pada ketiga kelompok termasuk dalam rentang kadar yang diharapkan (1,56-100 ng/10<sup>5</sup> sel/24 jam).

**Kata kunci:***ekspresi siklooksigenase-2, kultur sel Leydig, tikus Sprague Dawley, Advanced glycation end products, gamma-mangostin.*

**CYCLOOXYGENASE-2 EXPRESSION ON LEYDIG CELL CULTURE OF SPRAGUE DAWLEY RAT INDUCED BY ADVANCED GLYCATION END PRODUCTS 200µg/mL AND GIVEN GAMMA-MANGOSTIN 5µM**

**Meylani Hafizhah US<sup>1</sup>, Dicky Moch Rizal<sup>2</sup>, Rustamaji<sup>3</sup>**

<sup>1</sup>Medicine Study Program, Faculty of Medicine UGM

<sup>2</sup>Physiology Department, Faculty of Medicine UGM

<sup>3</sup>Pharmacology and Therapy Department, Faculty of Medicine UGM

**ABSTRACT**

**Background:** Advanced glycation end product is a glycation product that causes cell damage by inducing cyclooxygenase-2 expression, increasing oxidative stress and inflammation. Leydig cells, which are big and polygonal cells located in testis interstitial, are also affected by AGE. One of xanthone in fruit hull of *Garcinia mangostana*, *gamma-mangostin*, has an antiinflammatory effect by inhibit cyclooxygenase-2 expression in some type of cells, so it will inhibit toxic effect of AGE.

**Objectives:** Observe cyclooxygenase-2 expression as antiinflammatory agent on Leydig cell culture of *Sprague Dawley* rat which is induced by AGE 200µg/ml and given *gamma-mangostin* 5µM.

**Methods :** A secondary data of experimental laboratory study about cyclooxygenase-2 expression on Leydig cell culture of *Sprague Dawley* rat which is induced by AGE 200µg/mL and given *gamma-mangostin* 5µM compared to Leydig cell culture without *gamma-mangostin*. The collected data are analyzed using SPSS Statistics 19.0 software and one way ANOVA for mean comparation test.

**Result :** No significant difference ( $p=0,263$ ) of COX-2 expression between Leydig cell culture which is only induced by AGE 200µg/mL (10,03 ng/10<sup>5</sup>cell/24 hours) and Leydig cell culture which is induced by AGE 200µg/mL and given *gamma-mangostin* 5µM (9,08 ng/10<sup>5</sup> cell/24 hours).

**Conclusion:** COX-2 expression of Leydig cell culture which is induced by AGE 200µg/mL is higher than not given group. *Gamma-mangostin* 5µM decreases COX-2 expression in Leydig cell culture induced by AGE 200µg/ml, but the result is not statistically significant. Mean of COX-2 expression in all groups

are include in expected value (1,56-100 ng/10<sup>5</sup> cell/24 hours).

***Keywords: cyclooxygenase-2 expression, Leydig cell culture, Sprague Dawley rat, Advanced glycation end products, gamma-mangostin.***