

## Efek suplementasi kurkumin pada produksi malondialdehida (MDA) dan glutation (GSH) dalam kultur jaringan plasenta penderita preeklampsia

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### Abstrak

Tujuan : Tujuan dari penelitian ini ialah untuk mengetahui kadar MDA dan GSH pada kultur jaringan dan homogenate sel plasenta penderita preeklampsia yang diberikan kurkumin dosis rendah (0,01 mM) dan dosis tinggi (0,1 mM) dibandingkan dengan tanpa pemberian kurkumin sebagai kontrol.

Rancangan Penelitian : Penelitian ini bersifat eksperimental in vitro kultur jaringan plasenta penderita preeklampsia dengan sampel sebanyak 10. Kultur plasenta menggunakan medium RPM1 + FBS 20 % dan kurkumin dengan metode tabung menurut Rand dan dikultur selama 72 jam. Kultur dibagi dalam 3 kelompok yaitu ; Kelompok kontrol, kelompok pemberian kurkumin dosis rendah (0,01 mM) dan kelompok pemberian kurkumin dosis tinggi (0,1 mM). Kadar MDA diukur dengan menggunakan spektrofotometer pada panjang gelombang 530 nm. Pemeriksaan kadar GSH dengan menggunakan spektrofotometer pada panjang gelombang 412 nm. Data dianalisis dengan uji t berpasangan dengan batas kemaknaan 0,05.

Hasil : Kadar MDA yang terlarut pada medium kultur jaringan yang diberikan kurkumin dosis rendah (0.01 mM)  $12,01 \pm 4,55$  nmol/mL dan yang terlarut dalam homogenat sel  $5,18 \pm 3,07$  nmol/mg protein. Kadar MDA yang terlarut dalam supernatan kultur dan homogenat sel plasenta dengan pemberian kurkumin dosis tinggi (0,1 mM)  $10,19 \pm 3,91$  nmol/mL dan  $4,30 \pm 2,40$  nmol/mg protein. Kadar MDA lebih rendah secara bermakna dibandingkan kelompok kontrol ( $p < 0,05$ ). Kadar GSH yang terlarut pada medium kultur jaringan dan homogenat sel plasenta yang diberikan kurkumin dosis rendah (0.01 mM)  $11,40 \pm 2,51$  .tg/ml dan  $5,99 \pm 3,68$  pg/mg protein, sedangkan kadar GSH yang diberikan kurkumin dosis tinggi (0,1 mM)  $11,84 \pm 2,39$   $\mu\text{g/mL}$  and  $6,20 \pm 3,64$  .tg/mg protein. Kadar GSH lebih tinggi secara bermakna dibandingkan kelompok kontrol ( $p < 0,05$ ). Tetapi pemberian kurkumin dosis rendah pada homogenat sel tidak dapat meningkatkan kadar GSH secara bermakna.

Kesimpulan : Pemberian kurkumin dosis rendah dan dosis tinggi dapat menurunkan kadar MDA dan meningkatkan kadar GSH secara bermakna pada medium kultur jaringan plasenta penderita preeklampsia.

**OBJECTIVE:** To determine the effect of curcumin supplementation on MDA and GSH production in placental culture and homogenate in preeclampsia.

**STUDY DESIGN:** The study was an in vitro experimental study. Placentae were obtained from women with preeclampsia (n = 10). The tissue was cultured in RPMI + FBS 20% + antibiotic for 72 hours using the Rand method. The cultures were divided into 3 groups. The first was control, to the second group 0.01 mM (low dose) curcumin was added and the third with 0.1 mM (high dose) curcumin. Supernatant and homogenate of the cultures were analyzed spectrophotometrically for MDA (with absorbtion read at 530 nm) and GSH (with absorbtion read at 412 nm).

**RESULTS:** The concentration of soluble MDA in the supernatant of the placental culture given low dose curcumin (0.01 mM) was  $12.01 \pm 4.55$  nmol/mL, while the concentration in the homogenate was  $5.18 \pm 3.07$ -nmol/mg proteins. The concentration of MDA in the supernatant and homogenate of placental culture given high dose of curcumin (0.1 mM) was  $10.19 \pm 3.91$  nmol/mL and  $4.30 \pm 2.40$  nmol/mg protein. These concentrations were significantly lower than in the control group ( $p < 0.05$ ). The concentration of GSH in the supernatant and homogenate in low dose curcumin supplementation were  $11.40 \pm 2.51$   $\mu$ g/ml and  $5.99 \pm 3.68$ -pg/mg proteins, respectively. In the high dose curcumin supplementation group, the soluble and homogenate GSH concentrations were  $11.84 \pm 2.39$   $\mu$ g/mL and  $6.20 \pm 3.64$ -pg/mg protein. These results were significantly higher than the results of the control group ( $p < 0.05$ ), but in the homogenate of group given low dose curcumin supplementation the increase were not significant.

**CONCLUSION:** Low dose and high dose curcumin supplementation decreased MDA levels and increased GSH levels significantly in the supernatant of placental tissue culture in preeclampsia.</i>