

ABSTRAK

Pendahuluan: Terapi tunggal memberikan hasil yang kurang signifikan pada kualitas sperma tikus yang dipapar asap rokok sehingga perlu diberikan terapi kombinasi. **Tujuan:** mengetahui perbedaan efek kombinasi vitamin C, vitamin E, glutathione dan zink terhadap jumlah sel sertoli, jumlah sel leydig, kualitas sperma, ekspresi *caspase-3* pada tikus yang dipapar asap rokok. **Metode:** Penelitian eksperimental *post test only control grup design* menggunakan 36 ekor tikus, usia 8 minggu, berat 150-200 g, dikelompokkan menjadi 6 kelompok random. Kelompok K(+) dipapar asap rokok, P.I diberi vitamin C 9 mg/hari, vitamin E 1,8 IU/hari, glutathione 1,8 mg/hari, zink 0,2 mg/hari, P.II. diberi vitamin C 9 mg/hari, vitamin E 1,8 IU/hari, glutathione 1,8 mg/hari, P.III diberi vitamin C 9 mg/hari, vitamin E 1,8 IU/hari, P.IV diberi glutathione 1,8 mg/hari, zink 0,2 mg/hari. Semua kelompok ini diberi paparan asap rokok kecuali K(-) kelompok normal. Penelitian dilakukan 21 hari. **Hasil:** Data jumlah sel sertoli dan morfologi sperma hasilnya normal dan homogen dianalisis uji *one way anova* $p < 0,05$. Data jumlah sel leydig, motilitas sperma, jumlah sperma dan *caspase-3* hasilnya tidak normal dan atau tidak homogen dilakukan uji *kruskal wallis* $p < 0,05$. Uji *post hoc LSD* menunjukkan P.I berpengaruh paling tinggi dalam meningkatkan jumlah sel sertoli dan morfologi sperma. Hasil uji *mann-whitney* juga menunjukkan P.I berpengaruh paling tinggi dalam meningkatkan jumlah sel leydig, motilitas sperma, jumlah sperma dan P.I mampu menurunkan ekspresi *caspase-3* paling tinggi. **Kesimpulan:** Pemberian kombinasi vitamin C, vitamin E, glutathione dan zink berpengaruh terhadap jumlah sel sertoli, jumlah sel leydig, kualitas sperma, ekspresi *caspase-3* pada tikus putih yang dipapar asap rokok.

Kata kunci : jumlah sel sertoli, jumlah sel leydig, kualitas sperma (motilitas, jumlah dan morfologi spermatozoa), ekspresi *caspase-3*.

ABSTRACT

Introduction: Single therapy gives less significant results in sperm quality of mice exposed to cigarette smoke, so combination therapy is required. **Objective:** to know the effect of combination of vitamin C, vitamin E, glutathione and zinc on the number of sertoli cells, leydig cell count, sperm quality, caspase-3 expression in mice exposed to cigarette smoke. **Methods:** The experimental study of post test only control design group using 36 rats, age 8 weeks, weight 150-200 g, grouped into 6 random groups. Group K (+) was exposed to secondhand smoke, P.I was given vitamin C 9 mg / day, vitamin E 1,8 IU / day, glutathione 1.8 mg / day, zinc 0.2 mg / day, P.II. given vitamin C 9 mg / day, vitamin E 1,8 IU / day, glutathione 1.8 mg / day, P.III was given vitamin C 9 mg / day, vitamin E 1,8 IU / day, P.IV was given glutathione 1.8 mg / day, zinc 0.2 mg / day. All of these groups were exposed to secondhand smoke except normal group K (-) groups. The study was conducted 21 days. **Result:** Data of sertoli cell count and sperm morphology were normal and homogeneous result analyzed by one way anova test $p < 0,05$. Data of leydig cell count, sperm motility, sperm count and caspase-3 result were abnormal and or not homogeneous was performed cruciary wallis test $p < 0,05$. Post hoc LSD test showed P.I had the highest effect in increasing sertoli cell count and sperm morphology. The mann-whitney test also showed that P.I had the highest effect in increasing the number of leydig cells, sperm motility, sperm count and P.I was able to decrease the highest caspase-3 expression. **Conclusion:** Combination of vitamin C, vitamin E, glutathione and zinc have effect on sertoli cell count, leydig cell count, sperm quality, caspase-3 expression in white mouse exposed to cigarette smoke.

Keywords: sertoli cell count, leydig cell count, sperm quality (motility, number and morphology of spermatozoa), caspase-3 expression.