

ABSTRACT

THE EFFECT OF GIVING ZINC AND TOMATO (*Solanum lycopersium*) COMBINATION TOWARD THE NUMBER AND VIABILITY OF WHITE MICE SPERMS (*Rattus norvegicus*) STRAIN of Sprague Dawley INDUCED BY ELECTROMAGNETIC WAVE IN MOBILE PHONE

BY

TRIOLA FITRIA

Background: The radiation emitted by cell phones can cause oxidative stress through the increase of reactive oxygen species. The using of endogen antioxidants used was tomato which contained of the lycopene compound. Tomato and zinc have the function in counteracting free radical. This study aimed to determine zinc and tomato (*Solanum lycopersium*) combination toward the number and viability of white mice sperms (*Rattus norvegicus*) which induced by electromagnetic wave in mobile phone.

Methods: This study was conducted during one month at the Medicine Faculty of Lampung University.. The samples obtained 25 male mice which were divided into 5 groups, they were: K1 was normal mice (control), K2 was white mice which was given the exposure of cell phone two hours per day for 35 days, P1 was a group of white mice which was given the combination of zinc dose (0.135 mg/day) and tomato dose (1.85 mg/day). Then, P2 was: the group which was given the combination of zinc dose (0.27 mg/day) and tomato dose (3.7 mg/day) and P3 was white mice which was given the combination of zinc dose (0.54 mg/day and tomato 7.4 mg/ day). After P1, P2, and P3 were given the treatment then they were induced by phone within 2 hours for 35 days. The data was analized by using One- way Anova.

Results: The result showed that there was significant influence of zinc and tomato on viability ($p = 0.02$) and the number ($p = 0.00$). The mean of viability percentage the spermatozoa in group of K1, K2, P1, P2, and P3 was 42.54 ± 5.252 ; 27.66 ± 8.770 ; 52.68 ± 2.249 ; 54.40 ± 18.518 ; 67.90 ± 2.013 . While the mean of the number spermatozoa percentage in group of K1, K2, P1, P2, and P3 respectively were 76 ± 8.166 ; 39 ± 8.649 ; 182.40 ± 32.997 ; 189.60 ± 40.377 ; 197.60 ± 42.893 .

Conclusion: There was the protective effect influence in giving the tomato and zinc combination toward the number and viability of white mice sperms which was induced by GEM phone

Keywords: lycopene, reactive oxygen species, tomato, phone, zinc

ABSTRAK

PENGARUH PEMBERIAN KOMBINASI ZINK DAN TOMAT (*Solanum lycopersium* L.) TERHADAP JUMLAH DAN VIABILITAS SPERMA TIKUS PUTIH (*Rattus norvegicus* L.) GALUR *Sprague dawley* YANG DIINDUKSI GELOMBANG ELEKTROMAGNETIK PONSEL

OLEH

TRIOLA FITRIA

Latar Belakang: Radiasi yang dipancarkan ponsel dapat menyebabkan stres oksidatif melalui peningkatan *reactive oxygen species*. Antioksidan endogen yang digunakan adalah tomat yang mengandung kaya senyawa likopen. Tomat dan zink berfungsi dalam menangkal radikal bebas. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian kombinasi zink dan tomat (*Solanum lycopersium*.) terhadap jumlah dan viabilitas sperma tikus jantan (*Rattus norvegicus*) yang diinduksi gelombang elektromagnetik ponsel.

Metode: Penelitian ini dilakukan selama 1 bulan di Fakultas Kedokteran Universitas Lampung. Sampel yang digunakan adalah 25 ekor tikus jantan yang dibagi menjadi 5 kelompok yaitu: K1 yaitu tikus normal (kontrol), K2 yaitu tikus putih hanya diberi paparan ponsel 2 jam per hari selama 35 hari, P1 yaitu kelompok tikus putih diberi kombinasi zink (0,135 mg/hari) dan dosis tomat (1,85 mg/hari) lalu P2 yaitu kelompok yang diberi kombinasi dosis zink (0,27 mg/hari) dan tomat (3,7 mg/hari), kemudian P3 yaitu tikus putih yang diberi kombinasi dosis zink (0,54 mg/hari dan tomat 7,4 mg/hari). Baik pada P1, P2, dan P3 setelah diberi perlakuan lalu diinduksi dengan ponsel dalam waktu 2 jam selama 35 hari. Data dianalisis dengan menggunakan uji One-way Anova.

Hasil: Hasil menunjukkan terdapat pengaruh zink dan tomat terhadap viabilitas ($p=0,02$) dan jumlah ($p=0,00$). Rerata presentase viabilitas spermatozoa pada kelompok K1, K2, P1, P2, dan P3 adalah $42,54\pm 5,252$; $27,66\pm 8,770$; $52,68\pm 2,249$; $54,40\pm 18,518$; $67,90\pm 2,013$. Sedangkan rerata presentase jumlah spermatozoa pada kelompok K1, K2, P1, P2, dan P3 berturut-turut adalah $76\pm 18,166$; $39\pm 8,649$; $182,40\pm 32,997$; $189,60\pm 40,377$; $197,60\pm 42,893$.

Simpulan: Terdapat pengaruh efek protektif pemberian kombinasi tomat dan zink terhadap viabilitas dan jumlah spermatozoa tikus jantan yang diinduksi GEM ponsel.

Kata kunci: likopen, spesies reaktif oksigen, tomat, ponsel, zink