INTISARI

Kurkumin, salah satu zat aktif dalam kunyit/temulawak merupakan substansi antifertilitas, akan tetapi belum diketahui bagaimana kurkumin dapat menyebabkan infertilitas. Penelitian kajian fungsi kultur sei luteal dilakukan untuk mengetahui pengaruh kurkumin sintetik terhadap sekresi progesteron dengan perangsangan *human Chorionic Gonadotropin* (hCG) dan prostaglandin $F_{2\alpha}$ ($PGF_{2\alpha}$).

Sampel yang digunakan adalah kultur sel luteal korpus luteum umur 5 hari dari tikus Sprague Dawley prepubertal yang mendapat induksi ovulasi dengan 8 iu *Pregnan't Mare's Serum Gonadotrophin* (PMSG). Korpus luteum setelah didispersi dan homogen mengandung 24 x 10^4 sel luteal/ml dibagi menjadi 8 kelompok perlakuan terdiri dari 1 kelompok kontrol dan 7 kelompok perlakuan masing-masing mendapat kurkumin, hCG, hCG + kurkumin, $PGF_{2\alpha}$, $PGF_{2\alpha}$ + kurkumin, hCG + $PGF_{2\alpha}$, dan hCG + $PGF_{2\alpha}$ + kurkumin. Untuk mengetahui efek perlakuannya diukur kadar progesteron pada media kultur dengan metode *Immuno chemiluminesence* (Immulite).

Hasil penelitian menunjukkan bahwa produksi progesteron (ng/ml) dari 8 kelompok perlakuan, masing-masing n = 3, adalah: ① 28,66 ± 5,51 (pelarut); ② 32,86 ± 3,93 (kurkumin); ③ 72,60 ± 9,21 (hCG); ④ 34,43 ± 5,40 (hCG + kurkumin; ⑤ 32,33 ± 3,67 ($PGF_{2\alpha}$); ⑥ 34,33 ± 3,01 ($PGF_{2\alpha}$ + kurkumin); ⑦ 62,60 ± 6,88 (hCG + $PGF_{2\alpha}$) ⑧ 34,60 ± 1,39 (hCG + $PGF_{2\alpha}$ + kurkumin). Analisis statistik uji beda Kruskal Wallis pada 8 kelompok penelitian menunjukkan perbedaan yang bermakna ($p < 0,05$). Uji yang sama dilakukan pada 4 kelompok yang tidak mendapat kurkumin (nomor 1, 3, 5, 7) menunjukkan perbedaan bermakna ($p < 0,05$), sedangkan pada 4 kelompok yang mendapat kurkumin (nomor 2, 4, 6, 8) diperoleh hasil tidak berbeda bermakna ($p > 0,05$). Uji beda antar 2 kelompok perlakuan dengan U-Mann Whitney menunjukkan perbedaan bermakna antara kelompok yang diberi hCG (nomor 3) dan hCG + $PGF_{2\alpha}$ (nomor 7) dengan 6 kelompok lainnya.

Dari hasil penelitian ini dapat disimpulkan bahwa pemberian kurkumin tidak berpengaruh terhadap produksi progesteron oleh kultur sel luteral tikus dengan atau tanpa $PGF_{2\alpha}$.. Selain itu, pemberian kurkumin menurunkan produksi progesteron oleh kultur sel luteal yang mendapat rangsangan hCG atau hCG + $PGF_{2\alpha}$.

Kata Kunci: Kurkumin, hCG, $PGF_{2\alpha}$, Progesteron, Sel Luteal

ABSTRACT

Curcumin, which is one of active agents in turmeric, is found to be anti-fertility substance. Yet, the mechanism of how it effects fertility is, so far, still unknown. Therefore, the study on function of rat luteal cell culture is done to find out the effect of curcumin on progesterone synthesis by giving stimuli of *human Chorionic Gonadotropin* (hCG) and *Prostaglandin* $F_{2\alpha}$ ($PGF_{2\alpha}$).

The sample used in this study is 5-day-old *corpus luteum* (CL) of Sprague Dawley's immature rat, which receives ovulation induction of 8 iu *Pregnant Mare's Serum Gonadotrophin* (PMSG). After the CL is disperced and homogenized into $24x10^4$ cells, the luteal cell is divided into 8 groups concisting of the one control group and 7 experimental groups, each of which is given curcumin, hCG, hCG + curcumin, $PGF_{2\alpha}$, $PGF_{2\alpha}$ + curcumin, hCG + $PGF_{2\alpha}$, hCG + $PGF_{2\alpha}$ + curcumin. To know the behavioral effect of the experiment, the progesterone level contained in the culture medium is measured using the methode *immunochemiluminescence* (Immulite).

The result shows that the progesterone production (ng/ml) by the 8 experimental groups, which each having n=3, is as follow: ① 28,66 ± 5,51 (vehicle); ② 32,86 ± 3,93 (curcumin); ③ 72,60 ± 9,21 (hCG); ④ 34,43 ± 5,40 (hCG + curcumin); ⑤ 32,33 ± 3, 67 ($PGF_{2\alpha}$); ⑥ 34,33 ± 3,01 ($PGF_{2\alpha}$ + curcumin); ⑦ 62,60 ± 6,88 (hCG + $PGF_{2\alpha}$); ⑧ 34,60 ± 1,39 (hCG + $PGF_{2\alpha}$ + curcumin). The different test of Kruskal Wallis for the 8 groups shows a statistically significant difference ($p < 0.05$). The same test conducted for the 4 groups that do not receive curcumin (number 1, 3, 5, 7) also shows the difference significantly ($p < 0.05$), whereas for the 4 groups that receive curcumin (number 2, 4, 6, 8) no significant difference is shown ($p > 0.05$). Furthermore, the difference between the 2 experimentals (the group with hCG (number 3) and the group with hCG + $PGF_{2\alpha}$ (number 7) and the 6 others is also tested using U-Mann Whitney and the result shows that they are statistically different ($p < 0.05$).

In conclussion, curcumin influences insignificantly the production of progesterone by luteal cell culture of rat with or without $PGF_{2\alpha}$. In addition, curcumin reduces the production of progesterone by luteal cell culture stimulated by hCG or hCG + $PGF_{2\alpha}$.

Key word: Curcumin, hCG, $PGF_{2\alpha}$, Progesterone, Luteal Cell