Perubahan sebaran stadia epitel seminiferus, penurunan jumlah sel-sel spermatogenik dan kadar hormon testosteron total mencit (mus musculus l.) galur ddy yang diberi asap rokok kretek

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Abstrak

Ruang Lingkup: Asap rokok kretek terutama asap rokok sampingan dapat mempengaruhi proses spermatogenesis, kualitas semen dan perubahan kadar hormon testosteron. Pengaruh tersebut dapat terjadi melalui dua mekanisme, yaitu pertama komponen dalam asap rokok kretek berupa logam (kadmium dan nikel) dapat mengganggu aktifitas enzim adenilsiklase pads membran sel Leydig yang mengakibatkan terhambatnya sintesis hormon testosteron, kedua nikotin dalam asap rokok dapat menstimulasi medula adrenal untuk melepaskan katekolamin yang dapat mempengaruhi sistem saraf pusat sehingga dapat mengganggu proses spermatogenesis dan sintesis hormon testosteron melalui mekanisme umpan balik antara hipotalamus-hipofisis anterior - testis. Terganggunya proses spermatogenesis dapat juga disebabkan oleh kadar radikal bebas dan kerusakan kadar darah testis. Penelitian ini bertujuan untuk menilai secara kuantitatif perkembangan sel-sel germinal dan frekuensi sebaran stadia epitel seminiferus testis mencit setelah pemajanan asap rokok kretek selama 30 hari; 45 hari dan 60 hari dan menilai ada tidaknya perubahan kadar hormon testosteron total setelah pemajanan tersebut. Cara penelitian: Penelitian menggunakan 36 ekor mencit jantan galur DDY yang dibagi dalam enam kelompok perlakuan yaitu: kelompok kontrol 1 (KKP1); KKP2 dan KKP3 sebagai kontrol untuk kelompok perlakuan I (KP 1); KP2 dan KP3 yang secara berturut-turut diberi asap rokok kretek selama 30 hari; 45 hari dan 60 hari dalam kotak pengasapan selama 90 menit per hari. Pada hari ke 31;46 dan 6 mencit percobaan diisolasi organ testisnya, kemudian dilakukan pembuatan sediaan histologis organ testis dengan metode paraftn dan pengambilan plasma darah mencit melalui aorta jantung. Parameter yang diukur adalah jumlah sel-sel spermatogenik pads stadium V, VII dan XII; frekuensi sebaran stadia epitel seminiferus, kadar hormon testosteron total, berat testis dan ukuran diameter tubulus seminiferus. Hasii dan Kesimpulan: Hasil uji statistik parametrik ANAVA (cc= 0,05) menunjukkan terjadi penurunan jumlah sel-sel spermatogenik (KP2 dan KP3), perubahan frekuensi sebaran stadia epitel seminiferus (KP3), berat testis (KP2 dan KP3) dan ukuran diameter tubulus seminiferus (KP3) ($p < 0,05$).

Uji non parametrik Mann-Whitney terhadap kadar hormon testosteron total dalam kelompok perlakuan menunjukkan terjadi penurunan kadar hormon testosteron total pada KP3 dibandingkan kontrolnya Melalui uji Kruskal Wallis tidak terdapat perbedaan bermakna kadar hormon testosteron total antar kelompok perlakuan. Hasil penelitian ini menunjukkan bahwa asap rokok kretek dapat menghambat proses spermatogenesis.

<hr><i>The Alteration in the Distribution of Seminwerous Epithelial Stages, the Reduction of the Number Of Spermatogenic Cells and Total Concentration of Testosterone Hormone in Mice (Musmusculus L.) Strain Ddy Exposed to Kretek SmokeObjectives: kretek smoke, especially sidestream inhaled by passive smokers, can affect the process of spermatogenesis, the quality of semen and the alteration in testosterone concentration. The effects of kretek smoke mentioned occur in two mechanisms. The first mechanism in that

the component in kretek smoke (cadmium and nikel) can disturb the activity of adenylciclase enzyme on the membrane of Leydig cells. The disturbance leads the blocking of testosterone synthesis. The second mechanism is that nicotine in kretek smoke will stimulate adrenal medulla to release cathecolamine which can affect central nervous system, which in turn disturb the process of spermatogenesis and the secretion of androgen hormone through the feedback mechanism of hypothalamus-anterior hypofisis -- testis. The disturbance in the process of spermatogenesis is also through to be related with the concentration of free radicals contained in kretek smoke and damages of testicular blood barier. The aim of this study is to quantitavely assess the development of germinal cells and the frequency of distribution of testicular seminiferous ephitelial stages of mice after the exposure to kretek smoke for 30 days, 45 days and 60 days, also to investigate the presence of any alteration in total concentration of testosterone after exposure to kretek smoke. Methods:This study uses 36 male mice (Mus musculus L.) strain DDY which are grouped into 6 study groups: control group I (KKP 1); KKP2 and KKP3 that serve as control for study group 1 (KP 1); KP2 and KP3 which are exposed to kretek smoke for respectively 30 days, 45 days and 60 days in a smoking box, for 90 minutes each day. In the 31"; 46" and 61", the testes of mice used in study are isolated and mice blood plasma is obtained from cardiac aorta. Histological preparation of the testes are then made using the paraffin method. Parameter assessed are the number of spermatogenic cells at stages V, VII and XII, the frequency of the distribution of seminiferous ephitelial stages, total concentration of testosterone, the weight of testes and the diameter of seminiferous tubules. Result and conclusion: The result of parametric ANAVA (a= 0,05) shows that there is significant difference ($p < 0,05$) or there alteration on the number of spermatogenic cells (KP2 and KP3) , the frequency of the distribution of seminiferous ephitelial stages (KP3), the weight of testes (KP2 and KP3) and the diameter of seminiferous tubules (KP3).

Mann- Whitney test done the total concentration of testosterone in the study groups shows the reduction of testosterone in KP3 compared to its control. Non parametric Kruskal Wallis test shows that there is no significance difference of the total concentration of testosterone between study groups. The study found that the exposure to kretek smoke can block the process of spermatogenesis.</i>