Pengembangan metode analisis hormon progesteron pada tikus (Rattus norvegicus, berkenhout 1769) betina menggunakan teknologi Fourier Transform Infrared (FTIR)

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Abstrak

Telah dilakukan pemeriksaan hormon progesteron pada tikus betina (Rattus norvegicus, Berkenhout 1769) menggunakan FTIR. Penelitian bertujuan mengetahui bilangan gelombang dan nilai absorbansi gugus fungsi spesifik progesteron dalam darah selama siklus estrus, dan mengetahui keabsahan FTIR dalam mengukur konsentrasi hormon progesteron. Sampel darah dari sepuluh ekor tikus pada fase estrus dan diestrus yang ditentukan melalui ulas vagina dianalisis melalui FTIR dan radioimmunoassay (RIA).
Nilai absorbansi dari gugus fungsi spesifik progesteron, yaitu keton (1724 cm-1), metil (1375 cm-1), dan metil-keton (1354 cm-1), dibandingkan dengan nilai absorbansi asam karboksilat (1425 cm-1) pada hemoglobin. Konsentrasi progesteron saat estrus melalui RIA dan FTIR berturut-turut adalah 17,593 ± 4,246 ng/ml dan 0,853 ± 0,310 %; saat diestrus adalah 76.218 ± 4.687 ng/ml dan 1,024 ± 0.268 %.
<hr>Research in determining progesterone concentration on female rat (Rattus norvegicus, Berkenhout 1769) using FTIR has been conducted. The aim of this research was to determine the wavenumbers and absorbance values of progesterone?s functional groups in blood during estrous cycles, and to verify the FTIR?s capability in measuring progesterone concentration in blood. Blood samples from ten females which were taken at estrus and diestrus phases determined by vaginal smear, analyzed by FTIR and Radioimmunoassay (RIA).
Absorbance values of progesterone's functional groups, such as ketone (1724 cm¬1), methyl (1375 cm-1), and methyl-ketone (1354 cm-1), were measured relatively to absorbance values of hemoglobin?s carboxylic acid (1425 cm-1). Progesterone concentration at estrus by RIA and FTIR are 17,593 ± 4,246 ng/ml and 0,853 ± 0,310 % respectively; at diestrus are 76.218 ng/ml and 1,024 ± 0.268 % respectively.