Pengembangan Model Tikus Hiperlipidemia dan Analisis Aktivasi Platelet melalui Ekspresi P-Selectin = Development of Hyperlipidemic Rats Model and Analysis of Platelet Activation through P-Selectin Expression

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Abstrak

Diet tinggi lemak merupakan salah satu faktor risiko hiperlipidemia. Hiperlipidemia menyebabkan aktivasi platelet dengan peningkatan ekspresi Platelet Selectin (P-Selectin) yang bermanifestasi menjadi penyakit jantung koroner dan stroke. Penelitian ini bertujuan mengembangkan model tikus hiperlipidemia dengan memberikan variasi komposisi diet tinggi lemak ditambah diet tinggi karbohidrat serta menganalisis terjadinya aktivasi platelet melalui peningkatan ekspresi P-Selectin. Variasi komposisi diet tinggi lemak yang diberikan berupa 40% kuning telur puyuh dan 25% lemak kambing pada kelompok diet tinggi lemak 1, 30% kuning telur puyuh dan 35% lemak sapi pada kelompok diet tinggi lemak 2, serta 50% lemak kambing dan 15% mentega pada kelompok diet tinggi lemak 3. Setiap kelompok diet tinggi lemak juga diberikan 20% fruktosa, 2% kolesterol murni, 0,5% asam kolat, dan 12,5% minyak kelapa. Rerata kadar kolesterol total, trigliserida, dan P-Selectin kelompok diet tinggi lemak 1 sebesar 139,68 ± 11,88 mg/dL; 142,06 ± 11,76 mg/dL; dan 26,01 ± 7,35 ng/mL. Rerata kadar kolesterol total, trigliserida, dan P-Selectin kelompok diet tinggi lemak 2 sebesar 161,14 ± 14,42 mg/dL; 185,94 ± 13,36 mg/dL; dan 44,01 ± 9,38 ng/mL. Rerata kadar kolesterol total, trigliserida, dan P-Selectin kelompok diet tinggi lemak 3 sebesar 248,80 ± 7,48 mg/dL; 236,85 ± 7,53 mg/dL; dan 125,12 ± 39,62 ng/mL. Kondisi hiperkolesterolemia, hipertrigliseridemia, dan peningkatan ekspresi P-Selectin terjadi pada semua kelompok diet tinggi lemak. P-Selectin dengan kolesterol total berkorelasi sangat kuat dan positif sedangkan dengan trigliserida berkorelasi kuat dan positif. Dengan demikian, tiga variasi komposisi diet tinggi lemak ditambah diet tinggi karbohidrat dapat menghasilkan model hiperlipidemia dan meningkatkan ekspresi P-Selectin.

.....The high-fat diet was one of hyperlipidemia’s risk factors. Hyperlipidemia causes platelet activation with elevated expression through Platelet Selectin (P-Selectin) which manifests into coronary heart disease and stroke. This research aimed to develop hyperlipidemic rat models by varying the composition of high-fat diet plus high-carbohydrate diet and to analyze the platelet activation occurrence through elevated P-Selectin expression. Variations in the composition of the high-fat diet given were 40% quail egg yolk and 25% goat fat in the high-fat diet group 1, 30% quail egg yolk and 35% beef fat in the high-fat diet group 2, and 50% goat fat and 15% butter in the high-fat diet group 3. Each high-fat diet group was also given 20% fructose, 2% pure cholesterol, 0.5% cholic acid, and 12.5% coconut oil. The mean levels of total cholesterol, triglycerides, and P-Selectin in the high-fat diet group 1 were 139.68±11.88 mg/dL; 142.06±11.76 mg/dL; and 26.01±7.35 ng/mL. The mean levels of total cholesterol, triglycerides, and P-Selectin in the high-fat diet group 2 were 161.14±14.42 mg/dL; 185.94±13.36 mg/dL; and 44.01±9.38 ng/mL. The mean levels of total cholesterol, triglycerides, and P-Selectin in the high-fat diet group 3 were 248.80±7.48 mg/dL; 236.85±7.53 mg/dL; and 125.12±39.62 ng/mL. Conditions of hypercholesterolemia, hypertriglyceridemia, and elevated P-Selectin expression occurred in all high-fat diet groups. P-Selectin with total cholesterol was very strong and positively correlated while with triglyceride was strong and positively correlated. Therefore, three

variations of high-fat diet composition plus the high-carbohydrate diet obtained hyperlipidemia model and elevated P-Selectin expression.