

# **PENGARUH KADAR KOLESTEROL TOTAL DAN GULA DARAH PUASA TERHADAP PENURUNAN WORKING MEMORY PADA TIKUS WISTAR JANTAN DAN BETINA YANG DIINDUKSI DIET TINGGI LEMAK**

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## **Abstrak**

Konsumsi diet tinggi lemak di masyarakat saat ini semakin meningkat. Gaya hidup diet tinggi lemak yang tidak sehat berpengaruh besar terjadinya penyakit sistemik kronis. Konsumsi diet tinggi lemak yang berlebihan dalam jangka panjang memengaruhi homeostasis dari seluruh tubuh, termasuk kesehatan otak. Penelitian membuktikan diet tinggi lemak menyebabkan gangguan fungsi kognitif. Peningkatan kadar kolesterol dan insensitivitas reseptor insulin diduga dapat menyebabkan gangguan konsolidasi memori. Studi yang membahas pengaruh peningkatan kadar kolesterol dan disregulasi glukosa terhadap gangguan memori masih terbilang jarang. Tujuan penelitian ini mengetahui pengaruh perubahan kadar glukosa darah puasa dan kolesterol total terhadap penurunan working memory pada tikus Wistar jantan dan betina yang diinduksi diet tinggi lemak. Kadar kolesterol total dan gula darah puasa diukur menggunakan spektrometer dan error working memory diukur menggunakan labirin delapan lengan. Desain penelitian ini adalah eksperimen dengan jumlah sampel sebesar 24 tikus Wistar. Hasil kolesterol total, gula darah puasa dan *working memory* memiliki perubahan bermakna antara sebelum dan sesudah perlakuan ( $p=0,000$ ), hasil juga menunjukkan terdapat hubungan antara peningkatan kolesterol total ( $p=0,000$ ) dan gula darah puasa ( $p=0,011$ ) dengan peningkatan error working memory. Peningkatan kadar kolesterol total dan gula darah puasa akan meningkatkan penurunan *working memory*.

**Kata Kunci:** Diet tinggi lemak, gula darah, kolesterol, working memory.

# **THE EFFECT OF TOTAL CHOLESTEROL AND FASTING BLOOD GLUCOSE LEVELS INTO THE DECREASING OF WORKING MEMORY ON MALE AND FEMALE WISTAR RATS INDUCED BY HIGH-FAT DIETS**

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## **Abstract**

The consumption of high-fat diets (HFD) in the society is significantly increasing. The unhealthy HFD lifestyle has a major effect on chronic systemic disease. The excessive long term of HFD consumption affects entire bodies homeostatic, includes the brain health. The increasing of cholesterol levels and insensitivity of insulin receptor are thought to cause impairment of the memory consolidation. Studies that discuss the effect of increasing cholesterol levels and dysregulated glucose to the memories interferences are presently rare. The purpose of this research is to determine the effect of total cholesterol and fasting blood glucose levels change into the decreasing of working memory on male and female Wistar rats induced by HFD. Measurement of this study used spectrometer and an eight-arm radial maze. The design of this study was an experiment with a sample size of 24 Wistar rats. The results showed total cholesterol, blood fasting glucose levels, and working memory has meaningful change between before and after HFD ( $p=0,000$ ) and there was a correlation between the increased in total cholesterol ( $p=0,000$ ) and fasting blood glucose ( $p=0,011$ ) with an increase in working memory error. The increasing of total cholesterol and fasting blood glucose levels impact the decreasing of working memory.

**Keywords:** Blood glucose, cholesterol, high-fat diet, working memory.