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## **Antioxidative Activity of Synbiotic Beverage to Improve Oxidative Stress and Fraction Area of Degeneration and Necrosis in The Kidney Tissue of The Hyperlipidemic Rats Model**

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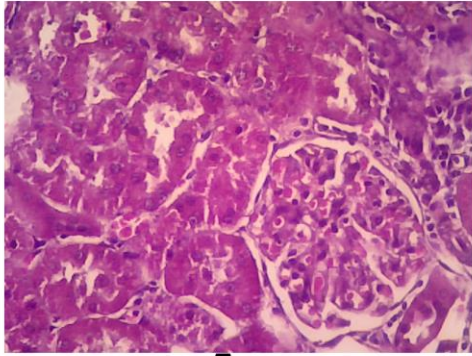
**Objectives :** This research aim is to know the antioxidative activity of synbiotic beverages to improve oxidative stress and fraction area of degeneration and necrosis in the kidney tissue of the hyperlipidemic rats model.

**Methods :** The synbiotic beverage was made from kefir milk and date palm concentrate. Kefir milk (KM) is obtained from fermentation for 12 hours at room temperature between kefir grain and pasteurized cow milk with a ratio of 1:20 (100 grams of kefir grain: 2 liters of cow milk). after 12 hours the filtrate in the form of kefir milk is then combined with date palm concentrate (DPC) with a ratio of 50% KM: 50% DPC. This combination was re-fermented for 12 hours at room temperature. The design of this research is quasi-experimental and uses 30 rats divided into 3 groups (A+, A-, K). The A- and K groups were given quail egg yolk 5 ml/200 gr body weight (grBW) for 4 weeks. For the next 4 weeks, the group of K was given a synbiotic beverage with a dose of 5 ml/200 grBW. All rats were terminated to take kidney organs to measure the oxidative stress (MDA & SOD) and were dissected transversally and then stained using hematoxylin and eosin (H&E). The Fraction area of degeneration and necrosis was measured by ImageJ application.

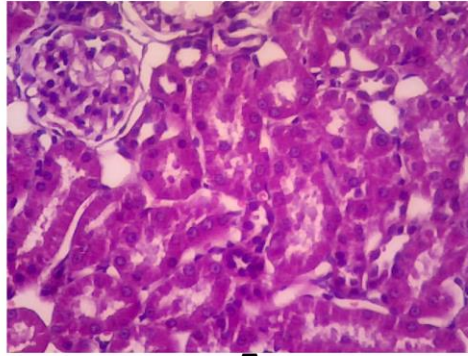
**Results :** After the synbiotic intervention, the MDA level (nmol/gr) was  $2.8 \pm 0.17$  (A+),  $13.5 \pm 0.12$  (A-), and  $4.1 \pm 0.09$  (K). The SOD activity (%) was  $76.43 \pm 2.52$  (A+),  $31.43 \pm 3.91$  (A-),  $63.93 \pm 1.53$  (K). The fraction area (%) was  $0.21 \pm 0.12$  (A+),  $2.12 \pm 0.12$  (A-),  $1.26 \pm 0.23$  (K). One-way ANOVA test showed significant differences between all groups with a p-value <0.05.

**Conclusions :** The antioxidative activity of synbiotic beverages has been proven to improve oxidative stress and fraction area of degeneration and necrosis in the kidney tissue of the hyperlipidemic rat model.

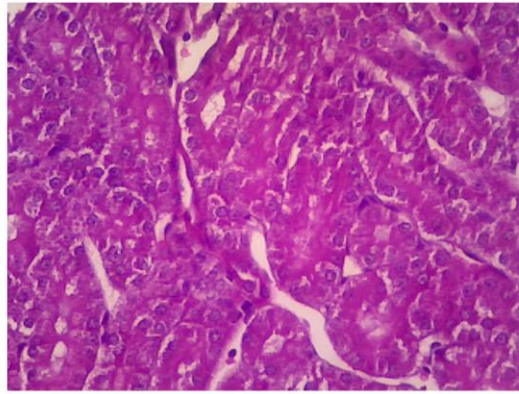
Histopathology of Kidney.jpg



**A+**



**A-**



**K**