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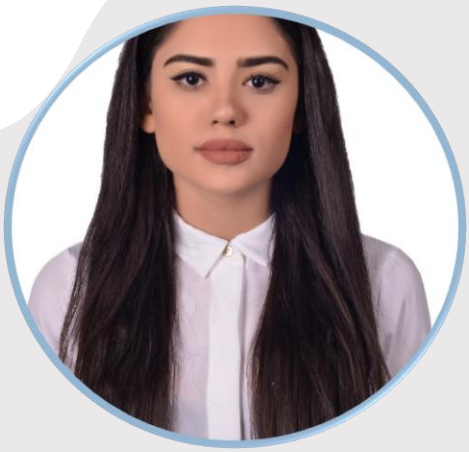

KEY WORDS *(at least 5 words)*

- ✓ academic
- ✓ thesis
- ✓ veterinary science
- ✓ biochemistry
- ✓ science

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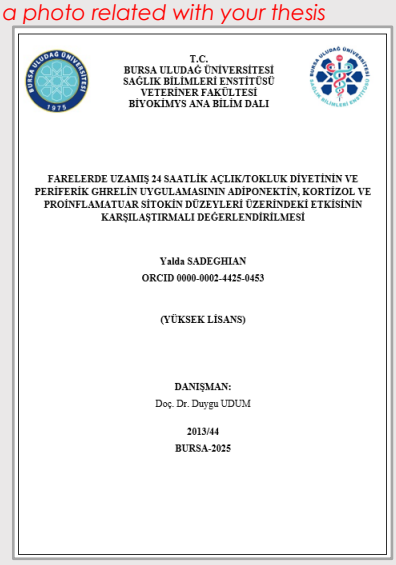

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FARELERDE UZAMIŞ 24 SAATLİK AÇLIK/TOKLUK DİYETİNİN VE PERİFERİK GHRELİN UYGULAMASININ ADİPONEKTİN, KORTİZOL VE PROİNFLAMATUAR SİTOKİN DÜZEYLERİ ÜZERİNDEKİ ETKİSİNİN KARŞILAŞTIRMALI DEĞERLENDİRİLMESİ

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A COMPARATIVE EVALUATION OF THE EFFECTS OF PROLONGED 24-HOUR FASTING/FEEDING AND PERIPHERAL GHRELIN ADMINISTRATION ON ADIPONECTIN, CORTISOL, AND PROINFLAMMATORY CYTOKINE LEVELS IN RATS

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THESIS ABSTRACT

Today, metabolic disorders such as obesity, type 2 diabetes, and cardiovascular diseases are recognized as significant health concerns. In combating these conditions, dietary approaches like intermittent fasting (IF) have gained attention due to their potential to improve metabolic health beyond just weight loss. This study comparatively examines the effects of 24-hour intermittent fasting (Alternate-Day Fasting, ADF) and peripheral ghrelin administration on adiponectin, cortisol, and proinflammatory cytokine levels in mice. The study involved 21 ten-week-old male Bulb-C mice divided into three groups: a control group (ad libitum feeding), an intermittent fasting group (24-hour fasting/24-hour feeding), and a ghrelin injection group (daily 1 µmol/kg intraperitoneal ghrelin). Following a two-week protocol, plasma levels of ghrelin, adiponectin, cortisol, TNF-a, IL-6, and IL-1β were measured using ELISA and statistically analyzed. The findings revealed that ghrelin levels in the intermittent fasting group increased significantly in the first week compared to the control group (40%, $p < 0.01$), with a more pronounced rise in the second week ($p < 0.001$). Adiponectin levels were higher in the intermittent fasting group in both weeks (35-40%, $p < 0.001$), but no such increase was observed in the ghrelin injection group. Cortisol levels rose in the intermittent fasting group during the first week ($p < 0.001$) but showed an adaptive decline in the second week ($p < 0.001$). Proinflammatory cytokines (TNF-a, IL-6, IL-1β) decreased significantly in the intermittent fasting group (35-45%, $p < 0.01$), whereas no similar effect was seen in the ghrelin injection group. This study demonstrates that intermittent fasting induces metabolic adaptation through increased adiponectin and reduced inflammatory response, despite elevated ghrelin and cortisol levels, whereas exogenous ghrelin administration fails to replicate these complex effects. The findings suggest that the metabolic benefits of intermittent fasting are not solely dependent on ghrelin elevation but involve broader hormonal and cellular mechanisms.

APPLICATION AREAS OF THE THESIS RESULTS

This study suggests that intermittent fasting could serve as a therapeutic strategy for managing obesity, type 2 diabetes, and chronic inflammatory diseases. By enhancing adiponectin levels and suppressing inflammatory cytokines, intermittent fasting may improve metabolic health and offer new avenues for personalized nutrition and endocrine disease management.

ACADEMIC ACTIVITIES

Sadeghian, Y., Üzümcü, İ., & Erbaş, O. (2021). Cancer cells and alpha-ketoglutarate. *DJ Tx Sci*, 6, 86-91.