The effects of Rosehip (Rosa canina) Seed Oil Pretreatment on Hippocampal Neurons and Oxidative Stress in Experimental Epilepsy

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THESIS ABSTRACT

This thesis evaluated the effects of Rosa canina (rosehip) seed oil pre-treatment on hippocampal neurons and oxidative stress parameters in a pilocarpine-induced experimental epilepsy model. Five groups received rosehip seed oil at doses of 0.125, 0.25, and 0.50 ml/day/rat for 28 days before epilepsy induction. Key oxidative stress markers—superoxide dismutase (SOD), catalase (CAT), total antioxidant status (TAS), total oxidant status (TOS), and oxidative stress index (OSI)—were measured. All pre-treatment groups showed significant decreases in TOS and OSI, with medium and high doses increasing CAT levels. Although TAS increases were not statistically significant, an upward trend was noted. Neuronal counts significantly decreased in the Dentate Gyrus, CA1, and CA3 regions after pilocarpine but increased dose-dependently with pre-treatment. Seizure scores also decreased in a dose-dependent manner. These effects likely result from antioxidant components in the oil, such as linoleic acid, linolenic acid, oleic acid, tocopherols, and vitamin C. The study contributes to the literature by being the first to evaluate rosehip seed oil as a phytotherapeutic agent in experimental epilepsy.

APPLICATION AREAS OF THE THESIS RESULTS

The results of this study demonstrated that rosehip seed oil exhibited significant anticonvulsant and neuroprotective effects in rats subjected to an epileptic seizure model. These findings suggest that phytochemical agents capable of modulating oxidative stress during the epileptogenesis process may be considered within the scope of complementary therapeutic approaches. The data obtained provide a scientific basis for further advanced research in the fields of pharmacognosy, neuropharmacology, and dietary supplement development.

ACADEMIC ACTIVITIES

Scholarships
1) YÖK 100/2000 – Priority Area of Human Brain and Neuroscience
2) TÜBİTAK 2211-A – General Domestic PhD Scholarship Program

Projects
BUÜ BAP TGA-2022-1033 – General Research Project titled "*Investigation of the Protective Effect of Rosehip Seed Oil Pre-treatment in an Experimental Epilepsy Model*"

Articles Published in National and International Peer-Reviewed Journals
1) Güvenç G., Altınbaş B., Kaşıkcı E., **Özyurt E.**, Baş A., Udum D., Niaz N., Yalçın M. (2019). "*Contingent role of phoenixin and nesfatin-1 on secretions of the male reproductive hormones.*" Andrologia.
2) Baş A., Güvenç-Bayram G., Altınbaş B., **Özyurt E.**, Yalçın E., Erbaykent-Tepedelen B., Ersoy F., Yalçın M. (2019). "*Effect of long-term centrally injected histamine and its receptors antagonist on the hypothalamic cyclooxygenase and lipoxygenase enzymes in rats.*" Journal of Research in Veterinary Medicine.

Papers Presented at National and International Scientific Meetings and Published in Proceedings
1) **Özyurt E.**, Güvenç G., Altınbaş B., Yalçın E., Yalçın M. (2019). "*Effects of Phoenixin on Reproductive Hormones in Male Rats.*" 2nd International Mardin Artuklu Scientific Research Congress, August 23-25, 2019. (Oral Presentation)
2) Yalçın E., Güvenç G., Altınbaş B., **Özyurt E.**, Yalçın M. (2019). "*Effects of Nesfatin on the Hypothalamic-Pituitary-Gonadal Axis in Male Rats.*" 2nd International Mardin Artuklu Scientific Research Congress, August 23-25, 2019. (Oral Presentation)

KEY WORDS

- ✓ Antioxidant
- ✓ Epilepsy
- ✓ Hippocampus
- ✓ Rosehip
- ✓ Phytotherapy

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