Research Title

The regenerative effects of acellular nerve allograft loaded with epothilone B on transected rat sciatic nerve.

	Author(s)	Degree	Academic Title	Specialization	Department	Faculty	University	Signature
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Plan and Goal of the Project

Peripheral nerve injury is a worldwide issue that causes disability and has significant socioeconomic consequences. Although peripheral axons can regenerate and form functional connections, functional restoration following nerve transection is always incomplete, and current treatments, even in the ideal setting, are insufficient.

In this regard, acellular nerve grafts appear to be a promising alternative for bridging peripheral nerve defects in cases where direct suturing of the nerve stump is not possible. However, the regeneration outcome of acellular nerve allograft is not optimal and often inferior to autograft. In addition, evidence suggests that the co-administration of neuroprotective agents that promote neuron survival and axonal outgrowth can be used to improve the regenerative properties of nerve grafts.

The aim of this study is to hypothesize that implanting a decellularized nerve allograft loaded with epothilone B in a transected rat sciatic nerve model will improve nerve regeneration and functional restoration. Epothilone B is an antineoplastic agent approved by the FDA that has been shown to improve microtubule stability and promote a-tubulin polymerization. Furthermore, it has been shown to induce axonal elongation and reduce scarring after SCI (spinal cord injury) in rodents.

So, adult male Wistar rats will be randomly assigned to one of 5 experimental groups (n = 10): healthy control, sham surgery, autograft, acellular nerve allograft, and acellular nerve allograft loaded with epothilone B. Acellular nerve allografts will prepare by decellularization of the sciatic nerves of rats, as described earlier by Hudson et al. (2004). All grafts will be used to bridge a 10 mm sciatic nerve gap. The nerve regeneration process

in the animals will be monitored for 16 weeks following surgery using functional, electrophysiological, and morphological analyses.

Application Date:	**13/9/2022**
Start Date:	**1/10/2022**
Estimated Finishing Date:	**1/6/2023**

Approval of the Scientific Committee	
☑ **Approved** ☐ **Rejected**	
Comment:	
Date	**Head of Scientific Committee**
07/11/2022	**Name:** Dr. Orhan Tuğ **Signature:**

Approval of the Head of Department
☑ **Approved** ☐ **Rejected**
Comment:

Date	Head of Department
...../...../202...	Name: Harmud A. Hany Signature:

Faculty Decree

In accordance with the decision of the faculty council, meeting No. 6 , decree No. 5 on 6.10.2022, it was decided to accept the request.

Dean of Faculty

Name:

Signature:

Stamp:

Dr. Mehmet Özdemir
Vice President
Academic Affairs