

## PRECLINICAL STUDY OF A MEMBRANE WITH LAURIC ACID

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### INTRODUCTION:

A membrane is used for the reconstruction of bone defects in Guided Bone Regeneration technique. The incorporation of membrane and antimicrobial agent, lauric acid (LA) was developed. This study was designed to investigate the biocompatibility of the tested membrane and its ability to form new bone. 20 New Zealand White rabbits (NZWR) were randomly divided into four assessment periods; 3, 6, 12 and 24 weeks. After euthanized, gross and histological analysis were performed and the percentage of new bone area was calculated.

### MATERIALS & METHODS:

3.2 mm (width) x 6.4 mm (length) of CSD was surgically drilled at the proximal tibial metaphysis of NZWR. The membrane was inserted on the CSD.

### RESULTS:

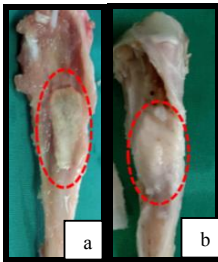


Figure 1: Gross examination in Representative Sample (a) 6 weeks (b) 24 weeks. Direct contact between bone and membrane, and no inflammatory reactions were observed.

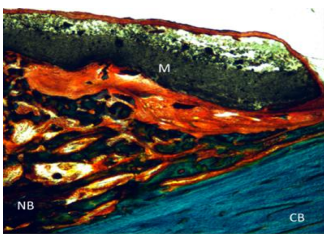


Figure 2: Photomicrograph at 3 weeks assessment. Extensive new bone formation (NB) is seen. NB is in close contact with the implanted membrane (M). Objective magnification: 4x

Table 1: Percentage of New Bone Area

Weeks	New Bone Area	Percentage of New Bone Area (%) ± Mean SD (n=3)
3 weeks		21.98 ± 2.52
6 weeks		35.45 ± 2.22
12 weeks		53.55 ± 7.23
24 weeks		60.63 ± 7.85

### DISCUSSIONS:

Direct contact between bone and membrane as well as no inflammation signs show that the tested membrane is biocompatible implant. Histological analysis revealed that signs of osteoconductive of the membrane was observed. An increase of percentage of new bone area over the assessment periods indicate that the membrane promotes new bone growth.

### CONCLUSION:

The membrane with LA show biocompatibility and promote new bone formation.

### REFERENCES:

1. Dayrit, F. M. (2015). The properties of LA and their significance in coconut oil. *Journal of the American Oil Chemists' Society*, 92(1), 1-15.
2. ISO/IEC 17025:2017 Testing Method, Orthopaedics Research Laboratory, IIUM.