

# PHOTOBIOMODULATION THERAPY ASSOCIATED WITH THE USE OF CARBON BIOMATERIAL IMPREGNATED WITH SILVER NANOPARTICLES IN THE PROMOTION OF BONE REPAIR WITH INFECTION CONTROL

**Autors:**

Ayres Fernando Rodrigues; Paulo Henrique Boulitreau Assirati; Marília Lucas Siena Del Bel, Patrícia de Almeida Mattos, Rodney Capp Palotta; Gabriela Ribeiro de Souza; Renato Prates; Rodrigo Labat Marcos

## **Biography:**

**Ayres Fernando Rodrigues** is Ph.D. student of the Postgraduation Program in Biophotonics Applied to Health Sciences, Nove de Julho University – UNINOVE, São Paulo, Brazil. Graduated in medicine in 1996, has a specialization in Orthopaedics and Traumatology surgery, both in from the Federal University of Mato Grosso do Sul, Brazil.

## **Abstract:**

Bone lesions are increasingly frequent in Brazil. Carbon materials, associated with silver nanoparticles, activated by photobiomodulation. They are promising in the treatment of infectious or aseptic bone failures.

The objective of this research is to evaluate the use of photobiomodulation associated with carbon material impregnated with nanosilver in the bone repair process in an experimental model of bone lesion in the tibia of rats.

Wistar Rats (200-250g), 90 days of life, 120 animals will be used. Bone injury will be performed in the tibia, with a bone defect of 1.5 mm  $\varnothing$  x 0.5 mm deep (method proposed by Bossini)

Biochemical analyses (quantification of alkaline phosphatase, acid phosphatase-TR) - RT-PCR will be performed to quantify gene expression: BMP-4, BMP-7, RANKL, OPG, OCC, MMP; morphological analysis, with the preparation of histological slides; and functional analysis, with resistance tests (Fmax and Dmax). Followed by statistical analysis of the results.