

# Action of galvanic currents on needles during percutaneous needle electrolysis

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## Abstract

**Background** The use of galvanic currents (GC), during percutaneous needle electrolysis (PNE) can make needles release metals and therefore decrease their diameter and increase resistance. If this were very marked, this could increase the temperature of the needle during use of the same. Furthermore, the loss of materials such as zinc, can trigger allergic reactions in people who are sensitive to these metals.

**Aim** to evaluate modifications of needles during the application of GC in PNE.

**Methods** The resistance was evaluated using a Digital multimeter Velleman DVM92. The GC was generated using the Physio Invasiva device by Prim (3 mA during 3 seconds, 3 applications were performed). For each needle, resistance of the proximal and distal area was evaluated (insertion) and the % of variation was calculated. 20 Physio Invasiva Needles measuring 0.30 × 40mm were evaluated and inserted in mice. A Quante 600 scanning microscope was used as well as a microanalysis device based on diffusion by RX Oxford Instruments (Universidad Rovira i Virgili). The protocols used were: A) 3mA during 3 seconds and 3 applications (Physio Invasiva by BRUMA Center-Tarragona (6 needles) and from the MV Clinic-Madrid (9 needles) in humans and from the UHN laboratory UHN (10 needles) in animals; B) 3mA during 3 seconds and 10 applications, 5 needles were evaluated in animals; C) 3mA during 3 seconds and 50 applications, 5 needles were evaluated in animals.

**Results** No change was obtained in the proximal-distal resistance ( $0.4\% \pm 3.33$ ). No loss of any of the metals occurred in the needles subjected to the protocol of 3/3/3 nor the protocol 3/ 3/10. However, in the 3/ 3/10 protocol, statistically significant losses were obtained for all the metals present.

**Conclusion** Physio Invasiva needles measuring 0.30 × 40mm do not shed metals nor modify their morphology during the intervention, therefore, the needle diameter of the needle does not decrease. Only exceptionally, when the number of applications is large, is there a loss of material.

## Keywords

- ▶ Galvanic currents
- ▶ percutaneous needle electrolysis
- ▶ electric resistance
- ▶ temperature
- ▶ electronic scanning microscope
- ▶ microanalysis

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