**Introduction**

- Recently, NIHL is recognized as a major cause of SNHL.
  - Worldwide, approximately 16% of all hearing impairments are due to continued exposure to loud noise.
  - It is expected that this estimate will rise in the future.
    - Traditional risks of factory work
    - Warfare
    - The poplarity of clubs and discos
    - The increasing use of MP3 players
    - Prolonged exposure to hazardous noises into the recreational area.

- Conclusion from recent reports
  - OHCs: primary target for cell death following excessive noise exposure

**Methods and Materials**

**Animal models and Experimental protocol**

- Adult male Sprague-Dawley (SD) (15 rats)
- A group: noise exposure group
- N group: noise exposure group + LLLT
- Control

> All experimental procedures were performed in accordance with the National Institutes of Health guidelines for the care and use of laboratory animals.

**Results**

**Noise exposure apparatus**

- Specifically designed noise box with a Barlow loudspeaker ONIT (Japan). Speaker attached on the top of the box and was slow-noise-resistant type.

**Laser irradiation**

- 800 nm diode laser (480x1000 microsteptronics, Daegun, Korea)
  - 24 hours after noise exposure
  - For 80 minutes for 10 days
  - Energy output: 100 mW
  - N side: 10 mW - irradiated for 12 days
  - N side: 0 mW - irradiated only

**Morphological Changes in SEM**

- HA: High density<br>OA: Osteoarthritis<br>NIHL: Noise induced hearing loss

**Conclusions**

- In this study, LLLT in rats with NIHL...
  - restored hearing threshold levels significantly after noise exposure
  - decreased the amount of damaged OHC counts
  - ultimately appeared to cause positively modulated repair processes
  - promotes cochlear hair cell survival
  - more possibilities of clinical implications in the treatment of various inner ear disorders

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