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Influence of the Thyroid Status on the Structure and Process of Restoration of the Rat's Lower Jaw Traumatic Damage Area under Stress

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The role of iodine-containing thyroid hormones in the process of postfracture repair of bone tissue under stress conditions was studied on 130 white outbred male rats. It has been shown that stress (free swimming in the cage) worsens the process of restoration of the fracture area of the lower jaw (holes with a diameter of 2.0 mm), in particular, on the 14th day, the number of islets of cartilaginous and immature bone tissue decreases against the background of an increase in the number of dense loose connective tissue, collagen fibers and the area of the Havers canals. All this indicates inhibition of the phases of the reparative response in the area of damage. All this indicates inhibition of the phases of the reparative response in the area of damage. Experimental hypothyroidism (25 mg/kg of mercazolil intragastrically for 20 days) negatively affects the trophism of the bone tissue itself and slows down the healing of the bone defect. L-thyroxine, on the other hand, in doses close to physiological (1.5–3.0 µg/kg intragastrically for 28 days) intensifies this process both after an isolated traumatic injury of the mandibular bone and after its combination with stress. In general, the results obtained reveal a new aspect of the anti-stress effect of iodine-containing thyroid hormones – their participation in post-fractural osteoregeneration under stress. The mechanisms of the obtained effect, which may be associated with the genomic and non-genomic action of iodine-containing thyroid hormones, are discussed.

Keywords: iodine-containing thyroid hormones, stress, fracture of the lower jaw