alasbimn journal

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Cita/Reference:
Guimarães, MICC; Da Silva, MA.; Okamoto, MRY. Effect of Recombinant TSH (rTSH) on Iodine-131 Residence Time on Thyroid Gland: An Experimental Study in Rats. Alasbimn Journal 7(27): January 2005

Effect of Recombinant TSH (rTSH) on Iodine-131 Residence Time on Thyroid Gland: An Experimental Study in Rats.

Patients with total thyroidectomy are strongly depended on hormone reposition therapy to maintain a normal metabolic status. The hormone therapy is mandatory for serum TSH levels suppression and for avoiding undesirable symptoms of hypothyroidism such as tiredness and slowness. However, patients with differentiated thyroid carcinoma need routine whole body iodine-131 survey within the first 2 years of total thyroidectomy, which requires increased levels of serum TSH to stimulate residual thyroid tissue or even metastases. Recombinant human thyrotropin (rTSH) was developed to avoid the interruption on hormone therapy, which brings comfort and safety to the patient.

Our purpose was to estimate the effect of rTSH on thyroid-absorbed dose and total glandular residence time after an oral administration of iodine-131. In this experimental model, 13 Wistar rats, 200 g of weight each, received 11,1 MBq of I-131 orally. Seven of these animals received rTSH (IPEN-CNEN) on the day before. 24 hours urine was collected for each animal. The urine was collected in metabolic cages and the tube collectors that contained the urine were verified on hourly basis. A CRC-15R Capintec dose calibrator was used to determinate their activities. The accumulated activity in thyroid and the residence time was calculated by MIRD standards.

The accumulated activity of 10 rats who received I-131 without rTSH stimulus was: Ã = 5.13 + 0.33 MBq.h and the average residence time was: RT = 0.46 + 0.22 h. The rats who ingested I-131 preceded by rTSH presented with higher accumulated activity on thyroid: Ã = 6.90 + 0.42 MBq.h. The residence time was also a little be longer in comparison with the group of rats without rTSH stimuli: RT = 0.61 + 0.39 h. These

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preliminary data suggest that rTSH promotes higher rates of accumulated activity of iodine-131 in the thyroid gland and also prolongs the residence time of iodine in normal glands, in this case about 32,6%. These findings might have significant impact on dosimetric studies on iodine-131 therapy preceded by rTSH administration in humans.

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