

## INTISARI

**Latar belakang.** *Potassium iodide* (KI) dan *potassium iodate* (KIO3) digunakan untuk fortifikasi dan profilaksis iodium. Perbedaan efek antara dosis tinggi KI dengan KIO3 terhadap fungsi tiroid, gambaran klinis, histologi tiroid, dan kadar TPOAb masih belum jelas.

**Tujuan.** Tujuan penelitian ini untuk mengetahui perbedaan efek antara pemberian dosis tinggi KI dengan pemberian dosis tinggi KIO3 secara oral selama 12 minggu terhadap fungsi tiroid, gambaran klinis, histologi tiroid, dan kadar TPOAb pada tikus jantan Wistar hipotiroid.

**Metode.** Sejumlah 48 ekor tikus jantan Wistar dewasa dibagi 8 kelompok. Tujuh kelompok diinduksi hipotiroid dengan PTU dosis 54 mg/kgBB/hari secara oral selama 14 hari dan 1 kelompok kontrol. Pada 7 kelompok tikus hipotiroid, 1 kelompok diberikan aquades 2 ml/hari, 3 kelompok diberikan KI dosis : 19,8, 39,6, dan 79,2 µg I/hari, dan 3 kelompok diberikan KIO3 dosis : 19,8, 39,6, dan 79,2 µg I/hari secara oral selama 12 minggu. Kadar TSH, FT4, dan TPOAb serum diperiksa sebelum dan sesudah perlakuan, BB ditimbang setiap minggu, dan tanda klinis diamati setiap hari. Pada akhir penelitian, tinggi sel epitel folikel tiroid (TSEFT) diukur dari preparat histologi tiroid seluruh hewan uji.

**Hasil.** Fungsi Tiroid: Tidak terdapat perbedaan kadar TSH dan FT4 antara pemberian KI dengan pemberian KIO3 dosis: 19,8, 39,6, 79,2 µg I/h ( $p>0,05$ ). Status tiroid: Tidak terdapat perbedaan kadar TSH dan FT4 antara pemberian KI, dan KIO3 dosis 19,8 µg I/h dengan kontrol ( $p>0,05$ ); Kadar TSH pemberian KI, dan KIO3 dosis 39,6 µg I/h lebih tinggi dibandingkan kontrol ( $p<0,05$ ) dan tidak terdapat perbedaan kadar FT4 antara pemberian KI, dan KIO3 dosis 39,6 µg I/h dengan kontrol ( $p>0,05$ ); Kadar TSH pemberian KI dosis 79,2 µg I/h lebih rendah dibandingkan kontrol ( $p<0,05$ ) dan tidak terdapat perbedaan kadar FT4 antara pemberian KI dosis 79,2 µg I/h dengan kontrol ( $p>0,05$ ); Kadar TSH pemberian KIO3 dosis 79,2 µg I/h lebih rendah dibandingkan kontrol ( $p<0,05$ ) dan kadar FT4 pemberian KIO3 dosis 79,2 µg I/h lebih tinggi dibandingkan kontrol ( $p<0,05$ ). Gambaran klinis: Tidak terdapat perbedaan BB dan skor tanda klinis antara pemberian KI dengan pemberian KIO3 dosis: 19,8, 39,6, 79,2 µg I/h ( $p>0,05$ ). Histologi Tiroid: Tidak terdapat perbedaan TSEFT antara pemberian KI dengan pemberian KIO3 dosis: 19,8, 39,6, 79,2 µg I/h ( $p>0,05$ ). Kadar TPOAb: Tidak terdapat perbedaan kadar TPOAb antara pemberian KI dengan pemberian KIO3 dosis: 19,8, 39,6, 79,2 µg I/h ( $p>0,05$ ).

**Kesimpulan.** Tidak terdapat perbedaan efek antara pemberian KI dengan pemberian KIO3 dosis : 19,8, 39,6, dan 79,2 µg I/hari secara oral selama 12 minggu terhadap fungsi tiroid, gambaran klinis, histologi tiroid, dan kadar TPOAb pada tikus jantan Wistar hipotiroid. Pemberian KI, dan KIO3 dosis 19,8 µg I/hari secara oral selama 12 minggu menyebabkan eutiroid pada tikus jantan Wistar hipotiroid. Pemberian KI dosis 79,2 µg I/hari menyebabkan hipertiroid subklinis dan pemberian KIO3 dosis 79,2 µg I/hari menyebabkan hipertiroid.

Kata Kunci: KI, KIO3, Iodium, Tiroid, Iodida, Iodat, Hipertiroid, Hipotiroid

## ABSTRACT

**Background.** Both KI and KIO3 were used for iodine fortification and prophylaxis. The differences in effects of high doses KI and KIO3 on thyroid function, clinical features, thyroid histology, and TPOAb levels are remain unclear.

**Objective.** The aim of the study was to compare the effects of oral administration of high doses KI and KIO3 for 12 weeks on thyroid function, clinical features, thyroid histology, and TPOAb levels in hypothyroid male Wistar rats.

**Methods.** Forty-eight adult male Wistar rats were divided into eight groups. Seven groups were orally given PTU 54 mg/kg of body weight once daily for 14 days to induce hypothyroidism and 1 group as the control. Hypothyroid rats groups, 1 group was orally administered with aquadest 2 ml/day, whereas 3 groups were orally administered with KI at doses of 19,8, 39,6, and 79,2 µg I/day, and 3 groups were orally administered with KIO3 at doses of 19,8, 39,6, and 79,2 µg I/day for 12 weeks. Serum TSH, FT4, and TPOAb levels were performed before and after treatment, rats were weighed every week, and clinical signs were observed daily. At the end of experiment, the height of the thyroid follicular epithelial cells were measured histologically.

**Results.** Thyroid function : No differences in serum TSH and FT4 levels between administration of KI and KIO3 at doses of 19,8, 39,6, and 79,2 µg I/d ( $p>0,05$ ). Thyroid status: No differences in serum TSH and FT4 levels between administration of KI and KIO3 at 19,8, µg I/d than control ( $p>0,05$ ). The serum TSH levels of administration of KI and KIO3 at 39,6 µg I/d were higher than control ( $p<0,05$ ) and no differences in serum FT4 levels between administration of KI and KIO3 at 19,8, µg I/d than control ( $p>0,05$ ). The serum TSH levels of administration of KI at 79,2 µg I/d were lower than control ( $p<0,05$ ) and no differences in serum FT4 levels between administration of KI at 79,8, µg I/d and control ( $p>0,05$ ). The serum TSH levels of administration of KIO3 at 79,2 µg I/day were lower than control ( $p<0,05$ ) and the serum FT4 levels of administration of KIO3 at 79,2 µg I/d were higher than control ( $p<0,05$ ). Clinical features : No differences in body weight and clinical signs scoring between administration of KI and KIO3 at doses of 19,8, 39,6, and 79,2 µg I/d ( $p>0,05$ ). Thyroid histology: No differences in the thyroid follicular epithelial cells height between administration of KI and KIO3 at doses of 19,8, 39,6, and 79,2 µg I/d ( $p>0,05$ ). TPOAb levels: No differences in serum TPOAb levels between administration of KI and KIO3 at doses of 19,8; 39,6; and 79,2 µg I/d ( $p>0,05$ ).

**Conclusions.** No differences effect between oral administration of KI and KIO3 at doses of 19,8, 39,6, and 79,2 µg I/day for 12 weeks on thyroid function, clinical features, thyroid histology, and TPOAb levels in hypothyroid male Wistar rats. The effect of oral administration of KI, and KIO3 at a dose of 19,8 µg I/day for 12 weeks induced euthyroidism in hypothyroid male Wistar rats. The effect of oral administration of KI, and KIO3 at a dose of 79,2 µg I/day for 12 weeks induced subclinical hyperthyroidism, and hyperthyroidism.

**Keywords:** KI, KIO3, Iodine, Thyroid, Iodide, Iodate, Hyperthyroid, Hypothyroid