Pengaruh Hidrasi dan Frekuensi Urinasi terhadap Laju Eliminasi Iodium-131 Pasien Kanker Tiroid Dosis
150 mCi
Djosiska Aisyah Rahma, Ir. Ester Wijayanti, M.T., IPM.; dr. Hanif Afkari, Sp.KN-TM, Sub.Sp.Onk(K)
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

PENGARUH HIDRASI DAN FREKUENSI URINASI TERHADAP LAJU ELIMINASI IODIUM-131 PASIEN KANKER TIROID DOSIS 150 mCi

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Diajukan kepada Departemen Teknik Nuklir dan Teknik Fisika Fakultas Teknik
Universitas Gadjah Mada pada tanggal 20 Agustus 2026
untuk memenuhi sebagian persyaratan untuk memperoleh derajat
Sarjana Program Studi Teknik Nuklir

INTISARI

Differentiated Thyroid Cancer (DTC) dapat ditangani dengan terapi iodium-131 setelah tiroidektomi total. Hidrasi dan urinasi diperkirakan membantu pengeluaran iodium-131, tetapi hubungannya dengan laju eliminasi belum sepenuhnya diketahui. Penelitian ini bertujuan menganalisis hubungan volume air minum total dan frekuensi urinasi dengan laju eliminasi iodium-131 pada pasien yang menerima aktivitas 150 mCi.

Penelitian observasional analitik prospektif dilakukan pada 29 pasien. Laju dosis eksternal diukur pada jarak 1 meter pada jam ke-5, 21, 24, 29, dan 45 setelah pemberian iodium-131. Laju eliminasi direpresentasikan secara tidak langsung oleh konstanta laju penurunan efektif (λ_{eff}) dari model monoeksponensial. Hubungan utama dianalisis menggunakan korelasi Pearson.

Rerata λ_{eff} sebesar 0,04214 jam^{-1}. Volume air minum total tidak berhubungan bermakna dengan λ_{eff} ($r = -0{,}320; p = 0{,}090$), demikian pula frekuensi urinasi ($r = -0{,}329; p = 0{,}081$) dan total volume urin pada 18 pasien ($r = -0{,}026; p = 0{,}919$). Volume air minum total berhubungan positif dengan frekuensi urinasi ($r = 0{,}655; p < 0{,}001$). Sebanyak 26 pasien memenuhi kriteria rilis pada jam ke-45. Hidrasi dan urinasi belum menunjukkan hubungan bermakna dengan λ_{eff} sehingga pemantauan laju dosis secara individual tetap diperlukan.

Kata kunci: hidrasi, iodium-131, laju dosis eksternal, laju eliminasi, urinasi

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URINARY FREQUENCY AND HYDRATION EFFECTS ON IODINE-131 ELIMINATION RATE IN 150 mCi THYROID CANCER PATIENTS

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Submitted to the Department of Nuclear Engineering and Engineering Physics
Faculty of Engineering Universitas Gadjah Mada on August 20, 2026
in partial fulfillment of the requirement for the Degree of
Bachelor of Engineering in Nuclear Engineering

ABSTRACT

Differentiated thyroid cancer can be treated with iodine-131 after total thyroidectomy. Hydration and urination are expected to support iodine-131 excretion, but their relationship with the elimination rate remains unclear. This study analyzed the relationships of total water intake and urination frequency with the iodine-131 elimination rate in patients receiving 150 mCi.

A prospective analytical observational study included 29 patients. External dose rate was measured at 1 m at 5, 21, 24, 29, and 45 hours after iodine-131 administration. The elimination rate was indirectly represented by the effective decline-rate constant (λ_{eff}) obtained from a monoexponential model. The main relationships were analyzed using Pearson correlation.

The mean λ_{eff} was 0.04214 h^{-1}. Total water intake was not significantly correlated with λ_{eff} ($r = -0.320; p = 0.090$), nor were urination frequency ($r = -0{,}329; p = 0{,}081$) and total urine volume in 18 patients ($r = -0.026; p = 0.919$). Total water intake was positively correlated with urination frequency ($r = 0.655; p < 0.001$). Twenty-six patients met the release criterion at 45 hours. Hydration and urination were not significantly associated with λ_{eff}; therefore, individual external dose-rate monitoring remains necessary.

Keywords: elimination rate, external dose rate, hydration, iodine-131, urination

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