

# UJI KOMPARASI SIFAT FISIKA KIMIA TABLET METFORMIN BERMEREK DAN GENERIK DI KALURAHAN TAMANTIRTO, KABUPATEN BANTUL, YOGYAKARTA

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## INTISARI

**Latar Belakang:** Metformin adalah obat antidiabetes utama untuk diabetes melitus tipe 2 yang tersedia dalam bentuk bermerek dan generik. Perbedaan harga menimbulkan anggapan mutu berbeda, sehingga perlu dibuktikan melalui evaluasi fisik dan kimia sesuai standar.

**Tujuan Penelitian:** Mengevaluasi dan membandingkan karakteristik fisik dan kimia tablet metformin bermerek dan generik yang beredar di Kalurahan Tamantirto, Kabupaten Bantul, Yogyakarta.

**Metode Penelitian:** Penelitian deskriptif komparatif dilakukan pada lima sampel tablet metformin 500 mg, terdiri dari dua bermerek dan tiga generik. Uji fisik meliputi keseragaman bobot, ukuran (diameter dan tebal), kekerasan, kerapuhan, dan waktu hancur. Uji kimia dilakukan melalui penetapan kadar zat aktif menggunakan spektrofotometri UV-Vis pada panjang gelombang 233 nm. Data dianalisis menggunakan uji Levene, Shapiro-Wilk, ANOVA, dan Kruskal-Wallis, dilanjutkan uji post hoc bila diperlukan.

**Hasil Penelitian:** Bobot kelima jenis tablet berada pada rentang 531,920–661,330 mg, diameter kelima tablet antara 1,101–1,322 cm, dan ketebalan 0,451–0,548 cm. kekerasan kelima tablet kisaran antara 5,507–14,423 kg. Seluruh sampel memenuhi persyaratan kerapuhan (<1%) dengan nilai 0,000–0,096%. Waktu hancur kelima jenis tablet berkisar antara 4,87–11,16 menit. Kadar zat aktif kelima tablet berkisar antara 96,519–101,071% dengan CV 0,464–2,471%. Semua sampel sesuai USP, Farmakope dan standar lainnya.

**Kesimpulan:** Tablet metformin bermerek maupun generik memiliki mutu fisik dan kimia yang memenuhi persyaratan yang tercantum dalam Farmakope. Meskipun terdapat perbedaan pada beberapa parameter fisik, perbedaan tersebut tidak memengaruhi kesesuaian mutu maupun keamanan produk, sehingga tablet tetap memenuhi syarat untuk diedarkan dan dikonsumsi oleh masyarakat.

**Kata kunci:** Metformin, tablet generik, tablet bermerek, mutu fisik, kadar zat aktif

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# Comparative Study of the Physical and Chemical Properties of Branded and Generic Metformin Tablets in Kalurahan Tamantirto, Bantul Regency, Yogyakarta

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## ABSTRACT

**Background:** Metformin is a first-line antidiabetic drug for type 2 diabetes mellitus, available in both branded and generic forms. Price differences often lead to perceptions of different quality, thus requiring scientific evaluation of physical and chemical properties according to pharmacopoeial standards.

**Objective:** To evaluate and compare the physical and chemical characteristics of branded and generic metformin tablets available in Kalurahan Tamantirto, Bantul Regency, Yogyakarta.

**Methods:** A descriptive comparative study was conducted on five samples of 500 mg metformin tablets, consisting of two branded and three generic products. Physical tests included weight variation, dimensions (diameter and thickness), hardness, friability, and disintegration time. Chemical testing was performed by determining the active substance content using UV-Vis spectrophotometry at a wavelength of 233 nm. Data were analyzed using Levene's test, Shapiro-Wilk, ANOVA, and Kruskal-Wallis, followed by post hoc tests when necessary.

**Results:** Tablet weight ranged from 531.920–661.330 mg, diameter 1.101–1.322 cm, and thickness 0.451–0.548 cm. Hardness values ranged from 5.507–14.423 kg. All samples met the friability requirement (<1%) with values between 0.000–0.096%. Disintegration time ranged from 4.87–11.16 minutes. Active ingredient content ranged from 96.519–101.071% with a CV of 0.464–2.471%. All samples complied with USP, Indonesian Pharmacopoeia, and other standards.

**Conclusion:** Both branded and generic metformin tablets fulfilled the physical and chemical quality requirements of the Pharmacopoeia. Although some differences were observed in certain physical parameters, these did not affect product quality or safety. Therefore, all tablets remain suitable for distribution and consumption.

**Keywords:** Metformin, generic tablets, branded tablets, physical quality, active ingredient content

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