[DESCRIPTION]

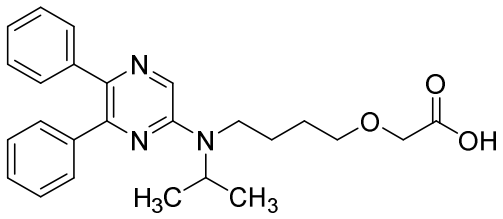
[Title of Invention] CRYSTAL

[Technical Field]

[0001]

The present invention relates to a novel crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid (hereinafter referred to as "Compound B").

[Chem. 1]



[Background Art]

[0002]

A pharmaceutical product is required to maintain its quality over a long period of time even under various conditions of distribution, storage, etc. Therefore, a compound to serve as an active ingredient is required to have high physicochemical stability. Due to this, as an active ingredient of a pharmaceutical product, a crystal which can be expected to have high stability is generally adopted.

In a process for screening a crystal of an active

[CLAIMS]

[Claim 1]

A form-I crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which shows diffraction peaks at diffraction angles (2θ) of 6.4°, 8.1°, 9.5°, 10.9°, 13.2°, 15.7°, 17.0°, 19.5°, 20.3°, 21.0°, and 22.8° in a powder X-ray diffraction spectrum obtained using a Cu-Kα radiation (λ=1.54 Å).

[Claim 2]

A form-I crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which shows absorption peaks at wavenumbers of 2874 cm^{-1}, 1736 cm^{-1}, 1558 cm^{-1}, 1375 cm^{-1}, 1126 cm^{-1}, and 696 cm^{-1} in an infrared absorption spectrum.

[Claim 3]

A form-I crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which has an endothermic peak at 127°C in differential scanning calorimetry.

[Claim 4]

A form-II crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which shows diffraction peaks at diffraction angles (2θ) of 9.6°, 11.4°, 11.7°, 16.3°, 17.5°, 18.5°, 18.7°, 19.9°, 20.1°, 21.0°, and

24.6° in a powder X-ray diffraction spectrum obtained using a Cu-Kα radiation (λ=1.54 Å).

[Claim 5]

A form-II crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which shows absorption peaks at wavenumbers of 2867 cm^{-1}, 1749 cm^{-1}, 1568 cm^{-1}, 1382 cm^{-1}, 1131 cm^{-1}, and 701 cm^{-1} in an infrared absorption spectrum.

[Claim 6]

A form-II crystal of 2-{4-[N-(5,6-diphenylpyrazin-2-yl)-N-isopropylamino]butyloxy}acetic acid, which has an endothermic peak at 147°C in differential scanning calorimetry.

[Claim 7]

A pharmaceutical composition, comprising the crystal according to any one of claims 1 to 6 as an active ingredient.

[Claim 8]

A PGI2 receptor agonist, comprising the crystal according to any one of claims 1 to 6 as an active ingredient.

[Claim 9]

A therapeutic agent for symptoms associated with diabetic neuropathy, diabetic gangrene, a peripheral circulatory disturbance, chronic arterial occlusion,

intermittent claudication, scleroderma, thrombosis, pulmonary hypertension, myocardial infarction, angina pectoris, glomerulonephritis, diabetic nephropathy, chronic renal failure, bronchial asthma, interstitial pneumonia (pulmonary fibrosis), a chronic obstructive pulmonary disease, tubulointerstitial nephritis, an inflammatory bowel disease, or spinal canal stenosis, comprising the crystal according to any one of claims 1 to 6 as an active ingredient.