Claims

1. Use of a pharmaceutical composition containing tetraarsenic hexoxide (As_4O_6) as an active ingredient in the manufacture of a medicament for prevention or treatment of brain cancer, wherein the tetraarsenic hexoxide includes 99 wt% or more of tetraarsenic hexoxide crystalline polymorph a having features (i) to (iii) below:

(i) Cell parameters:

$a = b = c = 11.0734$ Å

$\alpha = \beta = \gamma = 90°$

$V = 1357.82$ Å^3

(ii) As-O bond length: 1.786 Å

(iii) O-As-O bond angle: 98.36°.

2. The use according to claim 1, wherein the tetraarsenic hexoxide has a purity of 99.9% or higher.

3. The use according to claim 1, wherein in the X-ray powder diffraction spectrum of the crystalline polymorph a, obtained by using a light source wavelength of 1.5406 Å within a diffraction angle (2θ) of 10° to 50° at a rate of 1°/min (scan step of 0.02°), peaks are shown at 2θ values of 13.84, 27.88, 32.32, 35.3, 39.84, 42.38, 46.34, 48.6, and 49.34.

4. Use of a pharmaceutical composition containing tetraarsenic hexoxide (As_4O_6) as an active ingredient in the manufacture of a medicament for inhibition of brain cancer metastasis, wherein the tetraarsenic hexoxide includes 99 wt% or more of tetraarsenic hexoxide crystalline polymorph a having features (i) to (iii) below:

(i) Cell parameters:

$a = b = c = 11.0734$ Å

α = β = γ = 90°

V = 1357.82 Å ^{3}

(ii) As-O bond length: 1.786 Å

(iii) O-As-O bond angle: 98.36°

5. A method for preparing a pharmaceutical composition containing tetraarsenic hexoxide (As_4O_6) for prevention or treatment of brain cancer, the method comprising:

a first step of heating sodium chloride at 100~800℃, followed by cooling;

a second step of placing arsenic trioxide (As_2O_3) on the sodium chloride, followed by heating from 100℃ to 1000℃ in an airtight state and then cooling;

a third step of separating crystals crystallized in a filter bed; and

a fourth step of repeating the second and third steps four to ten times using the crystals obtained in the third step instead of the arsenic trioxide in the second step, thereby obtaining tetraarsenic hexoxide crystals,

wherein the tetraarsenic hexoxide crystals obtained in the fourth step include 99 wt% or more of tetraarsenic hexoxide crystalline polymorph a (As_4O_6-a) having features (i) to (iii) below:

(i) Cell parameters:

a = b = c = 11.0734 Å

α = β = γ = 90°

V = 1357.82 Å ^{3}

(ii) As-O bond length: 1.786 Å

(iii) O-As-O bond angle: 98.36°.