Claims

1.Use of a therapeutically effective amount of a vinpocetine, an optical isomer thereof, a racemate thereof, a solvate thereof, a prodrug thereof, a metabolite thereof, a related compound or extract thereof, a crystalline compound thereof, a pharmaceutically acceptable salt, or any combination thereof in the manufacture of a drug or a preparation for preventing, delaying, inhibiting or treating myopia or myopia-related diseases, wherein the myopia does not include myopia in the elderly or pathological myopia, wherein the drug or the preparation does not comprise long-acting β-adrenoceptor agonist.

2.The use according to claim 1, wherein the vinpocetine, an optical isomer thereof, a racemate thereof, a solvate thereof, a prodrug thereof, a metabolite thereof, a related compound or extract thereof, a crystalline compound thereof, a pharmaceutically acceptable salt, or any combination thereof is as a main active ingredient in wherein the drug or the preparation.

3.The use according to claim 2, the content or efficacy of wherein vinpocetine, an optical isomer thereof, a racemate thereof, a solvate thereof, a prodrug thereof, a metabolite thereof, a related compound or extract thereof, a crystalline compound thereof, a pharmaceutically acceptable salt, or any combination thereof accounts for more than 50%, more than 60%, more than 70%, more than 80%, more than 90% or 100% of total active ingredients in wherein the drug or the preparation, and the percentage (%) is a mass ratio, a molar ratio, a titer ratio, or an efficacy contribution ratio to the use.

4.The use according to any of claims 1-3, wherein the myopia is selected from the group consisting of refractive myopia, axial myopia; congenital myopia, early-onset myopia, delayed onset myopia, late-onset myopia, low myopia, moderate myopia, high myopia, pseudomyopia, true myopia, myopia in children/adolescents, myopia in juveniles, myopia in adults, simple myopia, axial simple myopia, progressive myopia, primary myopia, secondary myopia, curvature myopia, index myopia, astigmatic myopia, position myopia, bending myopia, myopia caused by long-term use of eyes at close range, myopia caused by visual fatigue, myopia caused by adverse drug reactions, myopia caused by reading books, myopia caused by using electronic products, myopia caused by mismatch of refractive media, myopia caused by abnormal refractive

development, myopia caused by excessive eyeball growth, myopia caused by unhygienic use of eyes, myopia that is poorly or ineffectively treated with atropine, myopia caused by insufficient outdoor exercise, accommodative spastic myopia, myopia in infants, hereditary myopia, and myopia dominated by environmental factors.

5.The use according to claim 4, the concentration of wherein the vinpocetine, an optical isomer thereof, a racemate thereof, a solvate thereof, a prodrug thereof, a metabolite thereof, a related compound or extract thereof, a crystalline compound thereof, a pharmaceutically acceptable salt, or any combination thereof in wherein the drug or the preparation is 0.001 μM to 100 mM.

6.The use according to claim 4, the concentration or proportion of wherein the vinpocetine, an optical isomer thereof, a racemate thereof, a solvate thereof, a prodrug thereof, a metabolite thereof, a related compound or extract thereof, a crystalline compound thereof, a pharmaceutically acceptable salt, or any combination thereof in wherein the drug or the preparation is less than 25%, and the percentage (%) is mass/volume concentration, mass percentage, or mole ratio.

7.The use according to claim 4, administration of wherein the drug or the preparation is selected from the group consisting of systemic administration, local administration, parenteral administration, non-invasive administration, and combinations thereof.

8.The use according to claim 4, wherein the drug or the preparation further comprises pirenzepine, muscarinic antagonist, robaxin, indoramine, timolol maleate, epinephrine, pyrazine, perlapine, methylamine, chlorisondamine, acetylcholinesterase inhibitor, dopamine agonist, gamma-aminobutyric acid, naloxone, glucagon, retinoic acid, M receptor blockers, dibazole, polyunsaturated fatty acids, homatropine, 7-methylxanthine, niacin, piracetam, Salvia miltiorrhiza extract, safflower extract, fish oil, bear bile extract, vitamins, adenosine triphosphate, smooth muscle relaxants, drugs to prevent vasospasm, non-selective adenylate antagonist, vasodilators, pupil dilating components, decongestants, eye muscle accommodative components, anti-inflammatory agent components, astringent components, antihistamine components, anti-allergic components, components for inhibiting collagen degradation, hepatoprotective components, components for enhancing blood-retinal barrier, amino acids, antibacterial agent components, antioxidant component, saccharides, polymers or derivatives thereof, celluloses or derivatives thereof, local anesthetic components,

components for amblyopia treatment, components for glaucoma treatment, components for cataract treatment, type I phosphodiesterase inhibitors, miRNA or modified derivatives thereof.

9.The use according to claim 4, wherein the metabolite of a vinpocetine is apovincaminic acid.

10.The use according to claim 4, wherein the preventing, delaying, inhibiting or treating myopia or myopia-related diseases is controlling the progression of myopia, or slowing down the procession or speed of the refraction change towards negative in an individual with myopia or in an individual with a tendency to develop myopia.

11.The use according to any of claims 5-10, wherein the drug or the preparation is capable of being prepared into an injection, a tablet, a freeze-dried powder injection, a capsule, a granule, an aerosol, a liniment, a lotion, a cream, a drop, a flushing agent, a spray, an ointments, a patch, a syrup, an oral preparation, an eye preparation, an oil-water mixture, a suspension, a paste, a pill, a suppository, an emulsion, an eye ointment, an eye drops, or an eye gel.

~~1. Use of vinpocetine, or an optical isomer or a racemate, or a solvate, or a pharmaceutically acceptable salt, or a prodrug, or a metabolite, or a related compound or extract, or a crystalline compound thereof, or a combination of these substances, wherein, the use is selected from one of the following or two or more of the following:~~

~~① preventing and/or treating myopia and related symptoms thereof, and/or myopia correction; or~~

~~② inhibiting (controlling) the progression of myopia; or~~

~~③ preventing and controlling or delaying the occurrence and development of myopia (myopic eye); or~~

~~④ inhibiting and slowing down axial length elongation and/or vitreous chamber length (depth) increase in an individual with myopia or an individual with a tendency to develop myopia; or~~

~~⑤ preventing, slowing down, attenuating or treating the abnormal development of eyeballs associated with visual impairment; or~~

~~⑥ allowing an individual to obtain clearer distance vision without wearing glasses (such as framed glasses or OK lenses) or relying on vision correction means~~

(such as refractive surgery) than the distance vision before using these substances or means and/or than the distance vision without using these substances or means; or

⑦ inhibiting, delaying or slowing down the procession or speed of the refraction change towards negative in an individual with myopia or an individual with a tendency to develop myopia; or

⑧ preparing a drug, a preparation, a composition or a device, which are used to achieve at least one of ①-⑦ as stated above.

2. The use of claim 1, wherein systemic administration (such as oral administration, intravenous drip), and/or local administration (eye drops, eye injection, eye implant, skin ointment/periorbital emulsion application or eye ointment application), and/or parenteral administration (such as mucosal administration, transdermal administration, microneedle administration), and/or non invasive administration (such as administration via eye spray) is adopted.

3. The use of claim 1 or 2, wherein the drug, preparation or composition can be an injection, a tablet, a freeze-dried powder for injection, a capsule, an effervescent tablet, a chewable tablet, a buccal tablet, a granule, an ointment, a syrup, an oral liquid, an aerosol, a nasal drop, a topical preparation, an oral preparation, *etc*.; preferred is an ocular dosage form, including but not limited to an eye drop (eyewash), an eye ointment, an eye spray, an implant tablet, an eye gel, an eye patch, an eye microsphere, an eye sustained release preparation, a periorbital injection, and an intraocular injection; the drug, preparation or composition can also be a free solution, an oil-water mixture, a suspension, a liniment, a lotion, a cream, a drop, an electuary, a spray, an ointment, a patch, a paste, a pill, a suppository and an emulsion, and can contain celluloses (such as methylcellulose), polyhydric alcohols, cyclodextrins (such as hydroxypropyl-β-cyclodextrin), acidic co-solvents (such as citric acid), dendrimers, nanomaterials, sustained-release materials, liposomes or a combination of these substances.

4. The use of one of the preceding claims, wherein the individual with myopia or the individual with a tendency to develop myopia is a child and/or an adolescent, preferably a person aged 3 to 26 years old, more preferably a person aged 6 to 18 years

~~old; or a juvenile, preferably a person whose eyes (eyeballs) are still at the growth and development stages; or school-age people, preferably a student in grades 1 to 12; or people whose parents are highly myopic; or people with insufficient reserves for distance vision.~~

~~5. The use of one of the preceding claims, wherein the myopia is refractive myopia or axial myopia; congenital myopia (myopia is present at birth or before school age), early-onset myopia (under 14 years old), delayed onset myopia (16 to 18 years old), or late-onset myopia (after adulthood); low myopia (mild myopia), moderate myopia, or high myopia (severe myopia); pseudomyopia or true myopia; myopia in children and/or adolescents (preferably, aged 3-26 years old, more preferably, aged 6-18 years old), myopia in juveniles, myopia in adults, or myopia in the elderly; simple myopia or pathological myopia; axial simple myopia or simple axial myopia; axial myopia in children and/or adolescents (preferably, aged 3-26 years old, more preferably, aged 6-18 years old); axial myopia in school-age and preschool-age people; primary myopia or secondary myopia; primary myopia in children and/or adolescents (preferably, aged 3-26 years old, more preferably, aged 6-18 years old); or progressive myopia in children and/or adolescents (preferably, aged 3-26 years old, more preferably, aged 6-18 years old); curvature myopia, index myopia, astigmatic myopia, position myopia, or bending myopia; axial myopia in which the refraction continuously changes towards negative; myopia caused by long-term use of eyes at close range, myopia and pseudomyopia caused by visual fatigue, refraction change towards negative caused by adverse drug reactions, myopic eye, myopia caused by reading books, myopia caused by using electronic products such as mobile phones, myopia caused by mismatch of refractive media (components), refractive myopia, myopia caused by abnormal refractive development, myopia caused by excessive eyeball growth, myopia caused by unhygienic use of eyes, the imaging focus of distant objects falling in front of the retina due to various reasons, myopia that is poorly or ineffectively treated with atropine, myopia caused by insufficient outdoor exercise, accommodative spastic myopia, myopia in children, myopia in infants, hereditary myopia, or myopia dominated by environmental factors.~~

6. The use of one of the preceding claims, wherein the related symptoms of myopia include complications caused by myopia, such as complications of high myopia, and for example, floaters, glaucoma, posterior scleral staphyloma, retinal detachment, retinal tear, amblyopia, macular hemorrhage, choroidal neovascularization, choroidal atrophy, macular degeneration or maculopathy, visual field defect, progressive or sudden decrease in vision (especially near vision), eye soreness and/or pain, night blindness, astigmatism, anisometropia, blindness, vitreous liquefaction, vitreous opacity, squint, frequent blinking, frequent eye rubbing, anisometropia, blurred vision when looking at distant objects, need to squint or partially close eyelids to see distant objects clearly, headache caused by eye strain, inattention caused by myopia, difficulty seeing while driving, especially at night (nocturnal myopia), retinal atrophy and degeneration (hemorrhages and holes), subretinal neovascularization, or eyeball atrophy.

7. The use of one of the preceding claims, wherein the drug, preparation, composition or device further comprises other drugs or ophthalmic preparations, including but not limited to drugs for myopia treatment (such as pirenzepine, muscarinic antagonist, robaxin, indoramine, timolol maleate, epinephrine, pyrazine, perlapine, methylamine, chlorisondamine, acetylcholinesterase inhibitor, dopamine agonist, gamma aminobutyric acid, naloxone, glucagon, retinoic acid, salidroside, formononetin, etc.), M receptor blockers (such as blockers or antagonists or inhibitors targeting M2 or M3 receptors), bendazac and various salt forms thereof (bendazac lysine), atropine, dibazole, polyunsaturated fatty acids (such as DHA, EPA), prazosin, homatropine, anisodamine (racemic), tropicamide, 7-methylxanthine, niacin, piracetam, Salvia miltiorrhiza extract, safflower extract, fish oil, bear bile extract, vitamins, adenosine triphosphate (ATP), smooth muscle relaxants, drugs to prevent vasospasm, non-selective adenylate antagonist, vasodilators, pupil dilating components, decongestants, eye muscle (e.g., ciliary muscle) accommodative components, anti-inflammatory (antiphlogistic) agent components, astringent components, antihistamine components, anti-allergic components, components for inhibiting collagen degradation, hepatoprotective (avoiding or reducing liver toxicity) components, components for enhancing blood-retinal barrier (making it more difficult for compounds to penetrate this physiological barrier), amino acids, antibacterial agent

components, antioxidant components (such as vitamin C, tea polyphenols, glutathione, etc.), saccharides, polymers or derivatives thereof, celluloses or derivatives thereof, local anesthetic components, components for amblyopia treatment, components for glaucoma treatment, components for cataract treatment, type I phosphodiesterase inhibitors (specific or non specific), miRNA and modified derivatives thereof, therapeutic components for ophthalmic diseases, excipients, *etc*.

8. The use of one of the preceding claims, wherein vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances, and one or more drugs for prevention and controlling of myopia and/or one or more drugs for treatment of myopia are formulated or designed to be administered continuously, simultaneously, or sequentially, or alternately, or at intervals, or separately.

9. The use of one of the preceding claims, wherein the related compound or extract of vinpocetine is selected from one or more of vinpocetine metabolites (such as apovincaminic acid, hydroxyvinpocetine, hydroxyl-apovincaminic acid and dihydroxy-vinpocetine glycinate), vinca alkaloid, apovincamine, vinca extract (periwinkle), vincamine, voacanga africana extract, Apocynaceae plant extract, vincristine, tabersonine, vinblastine, vindoline, apovincaminic acid hydrochloride, catharanthine, ethyl vincaminate, methoxyvinpocetine and dihydrovinpocetine.

10. The use of one of the preceding claims, wherein the preparation is a health care product, a food, a dietary supplement, a nutritional product, a drink and other oral products or cosmetics.

11. The use of one of the preceding claims, wherein the device is an instrument, an equipment, a consumable, a system, a medical device, a health care product or an article for changing the appearance of eyes, such as a corneal contact lens, glasses, an intraocular lens, a suture line, an OK lens cleaning (maintenance) system, an eye patch, a patch for improving eyesight, a coloured contact lens, a microneedle, an eye spray system, an eye massager, an eye fumigation device, an ocular surface drug

delivery device, an intraocular drug delivery device, a fundus drug delivery device, an implantable pump, a wearable device, an acupoint massager, an eye relaxation device, a myopia treatment device or a drug-device combination for myopia prevention and control.

12. The use of one of the preceding claims, wherein vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances is used as a sole active ingredient or a main active ingredient or a direct active ingredient; or the content or efficacy of vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances accounts for 1% or less, or more than 1%, more than 10%, more than 20%, more than 30%, more than 40%, more than 50%, more than 60%, more than 70%, more than 80%, more than 90% or 100% of all active ingredients in the use, and the percentage (%) can be a mass ratio, a molar ratio, or a titer ratio, or an efficacy contribution ratio to the use.

13. The use of one of the preceding claims, wherein the concentration of vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances in the drug, preparation, composition or device is 0.001 μM to 100 mM, preferably 0.005 μM to 50 mM, preferably 0.01 μM to 1000 μM, preferably 0.05 μM to 100 μM , more preferably 0.1 μM to 25 μM, more preferably 0.1 μM to 15 μM; or the concentration or proportion of these substances or their combination in the drug, preparation, composition or device is less than 25%, preferably less than 5%, preferably less than 1%, more preferably less than 0.01%, more preferably less than 0.001%, and the percentage (%) can be mass/volume concentration (g/100 ml) or mass percentage or mole (number) ratio.

~~14. A drug, preparation, composition or device which is locally administrated for treating myopia or controlling myopia progression, wherein the concentration of vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances in the drug, preparation, composition or device is 0.001 μM to 50 mM, preferably 0.01 μM to 1000 μM, preferably 0.05 μM to 100 μM , more preferably 0.1 μM to 25 μM, more preferably 0.1 μM to 15 μM; or the concentration or proportion of these substances or their combination in the drug, preparation, composition or device is less than 25%, preferably less than 5%, preferably less than 1%, more preferably less than 0.01%, more preferably less than 0.001%, and the percentage (%) can be mass/volume concentration (g/100 ml) or mass percentage or mole (number) ratio.~~

~~15. A pharmaceutical composition or compound preparation containing at least 2 active substances, wherein the at least 2 active substances comprise vinpocetine, or an optical isomer or a racemate, or a solvate, or a pharmaceutically acceptable salt, or a prodrug, or a metabolite, or a related compound or extract, or a crystalline compound thereof, or a combination of these substances, and other active substances for treating myopia.~~

~~16. The pharmaceutical composition or compound preparation of claim 15, wherein the added amount, concentration and/or efficacy of vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances is not lower than the added amount, concentration and/or efficacy of any other active substances for treating myopia, and the efficacy is aimed at treating myopia or controlling myopia progress.~~

~~17. An ocular preparation, wherein, in the preparation, vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances is a direct, sole or main active ingredient for treating myopia; among them, the concentration of vinpocetine, or~~

~~the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances is 0.001 μM to 50 mM, preferably 0.01 μM to 1000 μM, preferably 0.05 μM to 100 μM , more preferably 0.1 μM to 25 μM, more preferably 0.1 μM to 15 μM; or the concentration or proportion of vinpocetine, or the optical isomer or the racemate, or the solvate, or the pharmaceutically acceptable salt, or the prodrug, or the metabolite, or the related compound or extract, or the crystalline compound thereof, or the combination of these substances is less than 25%, preferably less than 5%, preferably less than 1%, more preferably less than 0.01%, more preferably less than 0.001%, and the percentage (%) can be mass/volume concentration (g/100 ml) or mass percentage or mole (number) ratio.~~

~~18. The preparation of claim 17, wherein the preparation includes, but not limited to, an eye drop (eyewash), an eye ointment, an eye spray, an implant tablet, an eye gel, an eye patch, an eye microsphere, an eye sustained release preparation, a periorbital injection, or an intraocular injection.~~