

Description

SOLID PHARMACEUTICAL PREPARATION DISSOLVED IN ORAL CAVITY

FIELD OF THE INVENTION

[0001]

This invention relates to an orally dissolving solid preparation which can treat pain of throat and the like and provide simultaneously a continuous disinfection of the oral cavity by a single preparation.

BACKGROUND OF THE INVENTION

[0002]

Patients suffering from throat pain and swelling are increasing due to the wide spread use of automatic air conditioning, air and other pollution, contamination of surrounding environment, and the like. Such throat pain and swelling are generally treated by method in which the lesion is directly disinfected from the outside or by a method in which a drug is transferred into the blood circulation and the inflammation causing the throat pain and swelling is suppressed from the inside. Exemplary methods of directly disinfecting the lesion from the outside include gargling with a gargle containing povidone iodine or cetylpyridinium chloride; and disinfection by dissolving a troche containing a disinfectant in the mouth. Exemplary methods of suppressing the inflammation from the inside include intake of a tablet containing an anti-inflammatory agent such as tranexamic acid. Throat pain and swelling are generally treated by a combination of these different methods, and such combined treatment is inconvenient to carry out at office or in school since water is not always available. In view of such situation, there is a need to develop an easy-to-use preparation, namely, a preparation with improved compliance.

[0003]

In order to solve such a problem, a preparation comprising a sustained release tablet having a fast-disintegrating coating formed by compression coating has been proposed (JP-A-S62-246512). In the case of such a preparation, the fast-acting drug and the long-lasting drug are released in the body only after swallowing. Also known is a readily swallowable and easy-to-handle tablet adapted for oral administration comprising an inner core of swallowable size containing the pharmaceutically active component and a fast-disintegrating, compression-coated layer covering the inner core (JP-A-H08-143473). In this case, the tablet had to be swallowed after the dissolution of the fast-disintegrating layer. Accordingly, in both cases, effect of the drug could not be sustained even if a drug having direct effect to the throat was applied.

SUMMARY OF THE INVENTION

[0004]

Accordingly, an object of the present invention is to provide a solid preparation which can treat the pain of throat and the like, and provide simultaneously a continuous disinfection of the oral cavity by a single preparation.

[0005]

The inventors of the present invention made an extensive study to find a solid preparation which can treat the pain of throat and the like, and provide simultaneously a continuous disinfection of the oral cavity by a single preparation, and found that when a part containing an oral disinfectant component which disintegrates or dissolves after 3 minutes and a part containing an oral anti-inflammatory component which disintegrates or dissolves within 45 seconds to 2 minutes (the disintegration time being measured by a disintegration test carried out according to disintegration test method defined in Japanese Pharmacopeia) are combined to constitute an orally dissolving preparation, the resulting solid preparation will be able to treat the throat pain and simultaneously disinfect

the oral cavity when the preparation is dissolved in the oral cavity. The present invention has been completed on the basis of such a finding.

[0006]

Accordingly, this invention provides an orally dissolving solid preparation comprising a part containing an oral anti-inflammatory component which disintegrates or dissolves within 45 seconds to 2 minutes, and a part containing an oral disinfectant component which disintegrates or dissolves after 3 minutes, the disintegration time being measured by a disintegration test carried out according to disintegration test method defined in Japanese Pharmacopeia.

[0007]

The solid preparation of the present invention can treat the pain of the throat and the like, and provide simultaneously a continuous disinfection of the oral cavity by a single preparation when it is taken by dissolving in oral cavity. In addition, the preparation of the present invention has excellent practical advantage that it can be taken at any time and at any place without water for its administration.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 shows an outside view and a cross-sectional view of the solid preparation according to the present invention comprising an outer layer and a core.

FIG. 2 shows an outside view and a cross-sectional view of the solid preparation according to the present invention which is a bilayer preparation.

FIG. 3 shows an outside view and a cross-sectional view of the solid preparation according to the present invention which is a disk-shaped preparation.

DETAILED DESCRIPTION OF THE INVENTION

[0009]

Oral pains postulated in the present invention include pharyngitis, laryngitis, tonsillitis, stomatitis, scratchy throat, throat discomfort and scratchy voice, and excessive smoking.

[0010]

The oral anti-inflammatory component used in the present invention is preferably incorporated in the solid preparation at a content of 1 to 60% by mass, more preferably at 5 to 50% by mass, and particularly preferably at 10 to 40% by mass.

[0011]

The oral anti-inflammatory component used in the present invention may be any component capable of suppressing throat pain as described above, and exemplary anti-inflammatory components include antiplasmin agents such as tranexamic acid; non-steroid antiinflammatory agents such as dipotassium glycyrrhizinate, potassium glycyrrhizinate, ammonium glycyrrhizinate, and monoammonium glycyrrhizinate; and antiinflammatory enzyme preparation such as lysozyme chloride, bromelain, serrapeptase, semi-alkaline proteinase and seaprose; and the particularly preferred is tranexamic acid. Preferably, such an oral anti-inflammatory component is mainly absorbed from the digestive tract, namely, at stomach and its downstream to exert its anti-inflammatory action.

[0012]

The part containing the oral anti-inflammatory component of the present invention generally disintegrates in 45 seconds to 2 minutes, preferably in 45 seconds to 1 minute and 45 seconds, and particularly preferably in 45 seconds to 1 minute and 30 seconds when tested by the disintegration test method defined in Japanese Pharmacopeia. Such a quick disintegration or dissolution in 45 seconds to 2 minutes can be promoted by incorporating an additive that promotes disintegration of the solid preparation, for example, a soluble excipient, a swellable disintegrant or excipient, an excipient which creates spaces within the solid preparation, or an excipient or a disintegrant which facilitates penetration of saliva. The disintegration

or dissolution time as described above certainly correlates with the disintegration or dissolution time in the oral cavity. Such rapid disintegration or dissolution in the oral cavity results in rapid absorption and quick exertion of the anti-inflammatory action.

[0013]

The part containing the oral anti-inflammatory component of the present invention generally has a mass of at least 100 mg, preferably at least 200 mg, more preferably in the range of 300 mg to 2500 mg, and particularly preferably in the range of 500 mg to 1500 mg. The part containing the oral anti-inflammatory component of the present invention is not limited for its size. The size, however, is generally at least 8 mm, preferably at least 9 mm, more preferably in the range of 10 mm to 18 mm, and particularly preferably in the range of 11 mm to 15 mm in the diameter.

[0014]

The part containing the oral anti-inflammatory component used in the present invention may contain, in addition to the oral anti-inflammatory component, vitamins such as vitamin B₂, vitamin B₆, vitamin C, orotic acid, and pantothenic acid, which may be used alone or in combination of two or more.

[0015]

The part containing the oral anti-inflammatory component used in the present invention may contain pharmaceutically acceptable vehicles, for example, excipients, binders, disintegrants, sweeteners, lubricants, and flavors.

[0016]

Exemplary excipients include lactose, starches, crystalline cellulose, sucrose (purified saccharose or saccharose), fructose, glucose, mannitol, sorbitol, erythritol, xylitol, maltitol, hydrogenated oil, dibasic calcium phosphate, hydrated silicon dioxide, light anhydrous silicic acid, calcium silicate, magnesium aluminosilicate, and magnesium aluminometasilicate.

[0017]

Exemplary binders include hydroxypropylmethyl cellulose, hydroxypropylcellulose, gelatin, pregelatinized starch, polyvinyl pyrrolidone, polyvinyl alcohol, pullulan, gum arabic, and macrogol.

[0018]

Exemplary disintegrants include carboxymethylcellulose (carmellose), carboxymethylcellulose calcium (carmellose calcium), sodium carboxymethylcellulose (carmellose sodium), sodium carboxymethyl starch, corn starch, potato starch, wheat starch, rice starch, hydroxypropyl starch, partly pregelatinized starch, low substituted hydroxypropylcellulose, cross-linked polyvinyl pyrrolidone (crospovidone), croscarmellose sodium, and micro crystalline cellulose.

[0019]

Exemplary sweeteners include sucrose (purified saccharose or saccharose), fructose, glucose, mannitol, sorbitol, erythritol, xylitol, maltitol, honey, aspartame, disodium glycyrrhizinate, and saccharin sodium.

[0020]

Exemplary lubricants include magnesium stearate, calcium stearate, sodium stearyl fumarate, talc, and sucrose esters of fatty acids.

[0021]

Exemplary flavors include l-menthol, caramel, and various fruit flavors.

[0022]

The oral disinfectant component used in the present invention is preferably incorporated in the solid preparation at a content of 0.01 to 40% by mass, more preferably at 0.05 to 30% by mass, and particularly preferably at 0.05 to 10% by mass.

[0023]

The oral disinfectant component which may be used in the present invention include cetylpyridinium chloride, chlorhexidine hydrochloride, dequalinium chloride, creosote, benzalkonium chloride, phenol, and thymol, and the particularly

preferred is cetylpyridinium chloride. Preferably, such an oral disinfectant component is the one which mainly exerts its disinfectant action directly in the oral cavity.

[0024]

The part containing the oral disinfectant component of the present invention generally disintegrates after 3 minutes, preferably after 4 minutes, and particularly preferably after 5 minutes when tested by the disintegration test method defined in Japanese Pharmacopeia. The disintegration time is preferably in the range of 3 to 30 minutes, more preferably 4 to 25 minutes, and most preferably 5 to 20 minutes. Such disintegration or dissolution in 3 to 30 minutes may be realized by incorporating an excipient which has a good shape-retainability, an excipient or a binder which has binding properties, or by omitting the incorporation of the disintegrant. A continuous oral disinfection action is realized by such a gradual disintegration.

[0025]

The part containing the oral disinfectant component of the present invention generally has a mass of 50 mg to 1500 mg, preferably 100 mg to 1200 mg, and particularly preferably 120 mg to 800 mg. The size of the part containing the oral disinfectant component of the present invention is generally 4 mm to 25 mm, preferably 6 mm to 25 mm, more preferably 6 mm to 12 mm, still more preferably 7 mm to 11.5 mm, and particularly preferably 8 mm to 11 mm in the diameter.

[0026]

The part containing the oral disinfectant component used in the present invention may have a herbal medicine such as senegal, licorice, Platycodi Radix, Perillae Herba, or Lithospermii Radix, or an anti-inflammatory agent such as sodium azulene sulfonate, which may be used alone or in combination of two or more.

[0027]

The oral disinfectant component used in the present invention may contain a pharmaceutically acceptable vehicle,

for example, excipient, binder, sweetener, lubricant, and flavor.

[0028]

Exemplary excipients include lactose, starches, crystalline cellulose, sucrose (purified saccharose or saccharose), fructose, glucose, mannitol, sorbitol, erythritol, xylitol, maltitol, hydrogenated oil, dibasic calcium phosphate, hydrous silicon dioxide, light anhydrous silicic acid, calcium silicate, magnesium aluminosilicate, and magnesium aluminometasilicate.

[0029]

Exemplary binders include hydroxypropylmethyl cellulose, hydroxypropylcellulose, gelatin, pregelatinized starch, polyvinyl pyrrolidone, polyvinyl alcohol, pullulan, gum arabic, and macrogol.

[0030]

Exemplary sweeteners include sucrose (purified saccharose or saccharose), fructose, glucose, mannitol, sorbitol, erythritol, xylitol, maltitol, honey, aspartame, dipotassium glycyrrhizinate, and saccharin sodium.

[0031]

Exemplary lubricants include magnesium stearate, calcium stearate, sodium stearyl fumarate, talc, and sucrose alkanoate.

Exemplary flavors include l-menthol, caramel, and various fruit flavors.

[0032]

The part containing the oral anti-inflammatory component which disintegrates or dissolves in 45 seconds to 2 minutes and the part containing the oral disinfectant component which disintegrates or dissolves after 3 minutes are generally adjusted to a mass ratio of 1:0.015 to 1:8, preferably 1:0.04 to 1:4, and particularly preferably 1:0.08 to 1:2.

[0033]

The form of the solid preparation of the present invention is not particularly limited as long as it has the two parts as described above. The solid preparation, however, may

preferably have a form which allows the part containing the oral anti-inflammatory component to disintegrate or dissolve simultaneously with or before the part containing the oral disinfectant component. Exemplary such forms include (1) a form wherein the solid preparation comprises an outer layer and a core, and the outer layer contains the part containing the oral anti-inflammatory component and the core contains the part containing the oral disinfectant component (FIG. 1); (2) a form wherein the solid preparation is a multi-layered preparation having two or more layers, and the layers are separated into the layer containing the oral anti-inflammatory component and the layer containing the oral disinfectant component (FIG. 2 showing a bi-layer preparation as an example); and (3) a form wherein the solid preparation is a disk shaped preparation wherein the part containing the oral disinfectant component constitutes a doughnut-shaped disk and the part containing the oral anti-inflammatory component is embedded in the center hole space of the doughnut-shaped disk (FIG. 3). The disk-shaped preparation may have either round or rectangular shape. In the case of form (1), size of the part containing the oral disinfectant component and size of the part containing the oral anti-inflammatory component of the present invention are such that the ratio (ratio of the diameter) of the latter to the former is generally in the range of 1.1 times to 3 times, preferably 1.2 times to 2.6 times, and particularly preferably 1.3 times to 2 times bigger when the size of the former is set as 1.

[0034]

The solid preparation used in the present invention is obtained, for example, by the methods as described below. Both the part containing the oral disinfectant component and the part containing the oral anti-inflammatory component are produced by compression-molding a granule obtained either by wet granulation compression method or direct powder compression method. For example, the part containing the oral disinfectant component is produced by mixing the disinfectant component, other pharmaceutically active components, and appropriate additives

such as excipient and sweetener. In the case of wet granulation compression method, the mixture is mixed with a binder solution, then granulated; dried; pulverized; and then mixed with a lubricant, a flavor, and the like, and after mixing, compression-molded to be made into uncoated core tablets. In the case of direct powder compression method, the mixture is mixed with a lubricant, a flavor, and the like without granulation, and after mixing, compression-molded to be made into uncoated core tablets. In the meanwhile, the part containing the oral anti-inflammatory component is produced by mixing the anti-inflammatory component, other pharmaceutically active components, and appropriate additives such as excipient, disintegrant, and sweetener. In the case of wet granulation compression method, the mixture is mixed with a binder solution, then granulated; dried; pulverized; and then mixed with a lubricant, a flavor, and the like, and after mixing, produced into the powder mixture for the outer layer. In the case of direct powder compression method, the mixture is mixed with a lubricant, a flavor, and the like without granulation, and after mixing, produced into the powder mixture for the outer layer. The thus produced uncoated core tablet and the powder mixture for the outer layer are used to produce the solid preparation having the form as shown in FIG. 1 by compression-molding by using the uncoated core tablet for the internal core.

[0035]

In the solid preparation of the present invention, the part containing the oral disinfectant component is a troche. Such a troche is combined in the present invention with the part containing the oral anti-inflammatory component which is absorbed from digestive tract at stomach or its downstream to exert its anti-inflammatory action to thereby constitute the preparation which is to be dissolved in the oral cavity, and therefore, the pain of the throat and the like can be treated readily and simultaneously with the continuous disinfection of the oral cavity can be provided.

EXAMPLES

[0036]

Next, the present invention is described in further detail by referring to Examples which by no means limit the scope of the present invention.

[0037]

EXAMPLE 1

1 g of cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.), 183.8 g of sorbitol, and 3 g of saccharin sodium were mixed, and to this mixture was added a solution prepared by dissolving 8 g of hydroxypropylcellulose in 40 g of ethanol for wet granulation. The granules were dried and pulverized to obtain 195.8 g of powder for the core. This powder was mixed with 2 g of magnesium stearate, 2 g of menthol powder, and 0.2 g of citrus flavor, and made into tablets by a rotary tableting machine to produce the uncoated core tablets having a diameter of 8 mm and a mass of 200 mg. The resulting uncoated core tablets were coated by compression with 800 mg/tablet of a powder mixture of 250 g of tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.), 30 g of aspartame, 13 g of dipotassium glycyrrhizinate, 442.2 g of mannitol, 40 g of crospovidone, 8 g of magnesium stearate, 16 g of menthol powder, and 0.8 g of grapefruit flavor using a press coated tableting machine to produce a solid preparation having a diameter of 13 mm and a mass of 1000 mg.

[0038]

EXAMPLE 2

A powder mixture of 1 g of cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.), 292.7 g of mannitol, 3 g of magnesium stearate, 3 g of menthol powder, and 0.3 g of citrus flavor was produced into uncoated core tablets having a diameter of 9 mm and a mass of 300 mg by direct powder compression using

a rotary tableting machine. The resulting uncoated core tablets were coated by compression coating with 800 mg/tablet of powder mixture of 400 g of tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.), 30 g of aspartame, 13 g of dipotassium glycyrrhizinate, 292.2 g of sorbitol, 40 g of crospovidone, 8 g of sodium stearyl fumarate, 16 g of menthol powder, and 0.8 g of grapefruit flavor on a press coated tableting machine for cored tablets to produce a solid preparation with a diameter of 13.5 mm and a mass of 1100 mg.

[0039]

EXAMPLE 3

2 g of cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.), 184.3 g of xylitol, 184.3 g of erythritol, and 5 g of saccharin sodium were mixed, and to this mixture was added a solution prepared by dissolving 16 g of hydroxypropylcellulose in 80 g of ethanol for wet granulation. The granules were dried and pulverized to obtain 391.6 g of powder for the core. The powder was mixed with 4 g of magnesium stearate, 4 g of menthol powder, and 0.4 g of citrus flavor, and made into tablets with a rotary tableting machine to produce uncoated core tablets having a diameter of 10 mm and a mass of 400 mg. This uncoated core tablets were then coated with 1000 mg/tablet of a powder mixture of 250 g of tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.), 30 g of aspartame, 13 g of dipotassium glycyrrhizinate, 576 g of sorbitol, 100 g of microcrystalline cellulose, 5 g of magnesium stearate, 25 g of menthol powder, and 1 g of grapefruit flavor by compression using a press coated tableting machine to produce a solid preparation having a diameter of 14 mm and a mass of 1400 mg.

[0040]

EXPERIMENTAL EXAMPLE 1

The solid preparations produced in Examples 1 to 3 were evaluated by the disintegration test according to the disintegration test method defined in Japanese Pharmacopeia, Fourteenth Edition by using a disintegration tester (Model NT-4HS manufactured by Toyama Sangyo Co., Ltd.). 6 solid preparations were placed in the glass tubes of the basket at 1 tablet/tube, and immersed in the test solution (in this case, 1000 mL of purified water adjusted to a temperature of 37°C) in a beaker. The basket was subjected to a gentle up-and-down movement at 30 times/minute and at an amplitude of 55 mm. The time required for disintegration or dissolution of the part containing the oral anti-inflammatory component and the part containing the oral disinfectant component was determined by visual inspection, and the average value of 6 preparations was calculated. The formulation and the results are shown in Table 1.

[0041]

Table 1

		Ex. 1	Ex. 2	Ex. 3
Core	Cetylpyridinium chloride	1	1	2
	Sorbitol	183.8	-	-
	Mannitol	-	292.7	-
	Xylitol	-	-	184.3
	Erythritol	-	-	184.3
	Saccharin sodium	3	-	5
	Hydroxypropylcellulose	8	-	16
	Magnesium stearate	2	3	4
	Menthol powder	2	3	4
	Citrus flavor	0.2	0.3	0.4
	Total mass of the part containing the oral disinfectant component (mg)	200	300	400
	Size of the part containing the oral disinfectant component (mm)	8	9	10
Outer layer	Tranexamic acid	250	400	250
	Aspartame	30	30	30
	Dipotassium glycyrrhizinate	13	13	13

	Mannitol	442.2	-	-
	Sorbitol	-	292.2	576
	Crospovidone	40	40	-
	Microcrystalline cellulose	-	-	100
	Magnesium stearate	8	-	5
	Sodium stearyl fumarate	-	8	-
	Menthol powder	16	16	25
	Grapefruit flavor	0.8	0.8	1
	Total mass of the part containing the oral anti-inflammatory component (mg)	800	800	1000
	Size of the part containing the oral anti-inflammatory component (mm)	13	13.5	14
	Total mass after the press coating with core press coated tableting machine (mg)	1000	1100	1400
	Size after the press coating with core press coated tableting machine (mm)	13	13.5	14
Results	Time required for disintegration of the part containing oral anti-inflammatory component	65 sec.	82 sec.	75 sec.
	Time required for disintegration of the part containing oral disinfectant component	6 min. 15 sec.	8 min. 10 sec.	9 min. 15 sec.

[0042]

With regard to the disintegration time of the solid preparations of Example 1 to 3, the part containing the oral disinfectant component such as cetylpyridinium chloride took more than 3 minutes for the dissolution, whereas the part containing the oral anti-inflammatory component such as tranexamic acid disintegrated within 120 seconds. For this, it is assumed that the part containing the oral anti-inflammatory component disintegrates (or dissolves) quickly, and thus be able to exert its action upon swallowing, while the remaining part containing the oral disinfectant component gradually disintegrates (dissolves) to maintain its disinfection effects in the throat. In other words, the solid preparation of the present invention is a novel solid preparation which enables quick analgesic action simultaneously with the continuous

disinfection of the lesion. This preparation also exhibited good oral feeling.

[0043]

PREPARATION EXAMPLE 1

Cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.) (1.0 g), sodium azulene sulfonate (product name, sodium azulene sulfonate; manufactured by Alps Pharmaceutical Ind. Co., Ltd.) (0.8 g), sorbitol (183.0 g), and saccharin sodium (3.0 g) were mixed, and to this mixture was added a solution prepared by dissolving hydroxypropylcellulose (8.0 g) in ethanol (40.0 g) for wet granulation. The granules thus obtained were then dried and pulverized to obtain 195.8 g of core powder. The resulting powder was mixed with magnesium stearate (2.0 g), menthol powder (2.0 g), and citrus flavor (0.2 g), and tableted with a rotary tableting machine to produce uncoated core tablets having a diameter of 8 mm and a mass of 200 mg. The resulting uncoated core tablet was coated with 800 mg/tablet of a powder mixture of tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.) (250.0 g), riboflavin (product name, Japanese Pharmacopeia riboflavin; manufactured by Roche Vitamins Japan K.K.) (12.0 g), hydrochloric acid pyridoxine (product name, hydrochloric acid pyridoxine; manufactured by Takeda Pharmaceutical Co., Ltd.) (50.0 g), aspartame (30.0 g), dipotassium glycyrrhizinate (13.0 g), mannitol (380.2 g), crospovidone (40.0 g), magnesium stearate (8.0 g), menthol powder (16.0 g), and grapefruit flavor (0.8 g) by compression using a press coated tableting machine to produce a solid preparation having a diameter of 13 mm and a mass of 1000 mg.

[0044]

PREPARATION EXAMPLE 2

Cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.)

(1.0 g), sodium azulene sulfonate (product name, sodium azulene sulfonate; manufactured by Alps Pharmaceutical Ind. Co., Ltd.) (0.8 g), sorbitol (183.0 g), and saccharin sodium (3.0 g) were mixed, and to this mixture was added a solution prepared by dissolving hydroxypropylcellulose (8.0 g) in ethanol (40.0 g) for wet granulation. The granules were then dried and pulverized. The resulting powder was mixed with magnesium stearate (2.0 g), menthol powder (2.0 g), and citrus flavor (0.2 g) to produce a powder (200 g) for pressing tablets containing the throat disinfectant component. In the meanwhile, a powder (800 g) for pressing tablets containing the throat antiinflammatory component was produced by mixing tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.) (250.0 g), riboflavin (product name, Japanese Pharmacopeia riboflavin; manufactured by Roche Vitamins Japan K.K.) (12.0 g), hydrochloric acid pyridoxine (product name, hydrochloric acid pyridoxine; manufactured by Takeda Pharmaceutical Co., Ltd.) (50.0 g), aspartame (30.0 g), dipotassium glycyrrhizinate (13.0 g), mannitol (380.2 g), crospovidone (40.0 g), magnesium stearate (8.0 g), menthol powder (16.0 g), and grapefruit flavor (0.8 g). The powder containing the throat disinfectant component and the powder containing the throat antiinflammatory component were compression-molded by a tablet press for layered tablets to thereby produce a solid preparation having a diameter of 13 mm and a mass of 1000 mg.

[0045]

PREPARATION EXAMPLE 3

Sorbitol (1384.7 g) and sodium saccharin (22.0 g) were mixed, and the mixture was subjected to wet granulation by adding a solution prepared by dissolving cetylpyridinium chloride (product name, cetylpyridinium chloride; manufactured by Wako Pure Chemical Industries, Ltd.) (1.0 g), sodium azulene sulfonate (product name, sodium azulene sulfonate; manufactured by Alps Pharmaceutical Ind. Co., Ltd.) (0.8 g), and hydroxypropylcellulose (60.0 g) in ethanol (300.0 g). The

granules were then dried and pulverized, and magnesium stearate (15.0 g), menthol powder (15.0 g), and citrus flavor (1.5 g) were mixed. Ring-shaped solid preparation having a mass of 1500 mg was produced by using a rotary tableting machine with a ring-shaped die having a diameter of 21 mm. In the meanwhile, wet granulation was conducted by using a solution prepared by dissolving tranexamic acid (product name, tranexamic acid; manufactured by Daiichi Pharmaceutical Co., Ltd.) (80.0 g), riboflavin (product name, Japanese Pharmacopeia riboflavin; manufactured by Roche Vitamins Japan K.K.) (4.0 g), hydrochloric acid pyridoxine (product name, hydrochloric acid pyridoxine; manufactured by Takeda Pharmaceutical Co., Ltd.) (16.0 g), aspartame (8.0 g), dipotassiumglycyrrhizinate (3.0 g), mannitol (64.8 g), and hydroxypropylcellulose (8.0 g) in ethanol (40.0 g), and the granules were then dried, and pulverized, and mixed with crospovidone (10.0 g), magnesium stearate (2.0 g), menthol powder (4.0 g), and grapefruit flavor (0.2 g). This powder mixture was filled in the interior (hole) of the ring-shaped solid preparation at 200 mg/tablet, and compressed with a tablet press to produce a solid preparation having a diameter of 21 mm and a mass of 1700 mg.

CLAIMS:

1. An orally dissolving solid preparation comprising a part containing an oral anti-inflammatory component which disintegrates or dissolves within 45 seconds to 2 minutes, and a part containing an oral disinfectant component which disintegrates or dissolves after 3 minutes, said disintegration time being measured by a disintegration test carried out according to disintegration test method defined in Japanese Pharmacopeia.
2. The orally dissolving solid preparation according to claim 1, wherein the oral anti-inflammatory component is a component which exerts its anti-inflammatory action after being absorbed from digestive tract at stomach or its downstream, and the oral disinfectant component is a component which directly exerts its disinfectant action in oral cavity.
3. The orally dissolving solid preparation according to claim 1, wherein the solid preparation is a preparation comprising an outer layer and an internal core, wherein the outer layer comprises the part containing the oral anti-inflammatory component, and the internal core comprises the part containing the oral disinfectant component.
4. The orally dissolving solid preparation according to claim 1, wherein the solid preparation is a laminate preparation comprising two or more layers, wherein the layers are separated into the layer containing the oral anti-inflammatory component and the layer containing the oral disinfectant component.
5. The orally dissolving solid preparation according to claim 1, wherein the solid preparation is a disk-shaped preparation wherein the part containing the oral anti-inflammatory component is in the shape of a disk having a center hole, and the part

containing the oral disinfectant component is filled in the center hole space.

6. The orally dissolving solid preparation according to any one of claims 1 to 5, wherein the oral anti-inflammatory component comprises at least one pharmacological substance selected from tranexamic acid, dipotassium glycyrrhizinate, potassium glycyrrhizinate, ammonium glycyrrhizinate, monoammonium glycyrrhizinate, lysozyme chloride, bromelain, serrapeptase, semi-alkaline proteinase, and Seaprose.

7. The orally dissolving solid preparation according to any one of claims 1 to 6, wherein the oral disinfectant component comprises at least one pharmacological substance selected from cetylpyridinium chloride, chlorhexidine hydrochloride, dequalinium chloride, creosote, benzalkonium chloride, phenol, and thymol.

8. The orally dissolving solid preparation according to any one of claims 1 to 7, wherein the part containing the oral anti-inflammatory component which disintegrates or dissolves within 45 seconds to 2 minutes and the part containing the oral disinfectant component which disintegrates or dissolves after 3 minutes are included at a mass ratio of 1:0.015 to 1:8.