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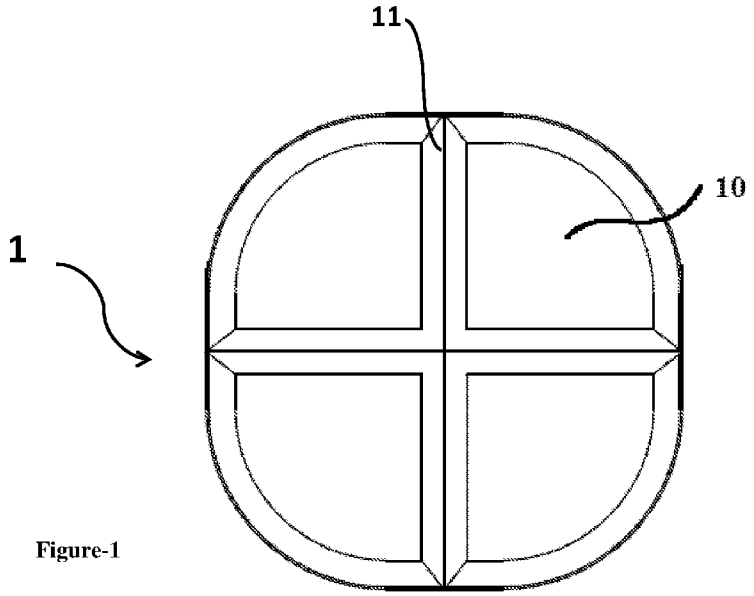

Figure-1

(57) Abstract: The invention is related to a pharmaceutical oral formulation comprising deferasirox or a pharmaceutically acceptable salt of deferasirox and a pharmaceutical product (1) in a scored (11) film tablet form manufactured from said formulation, for use in the treatment of situations occurring in the body with excessive accumulation of iron.

WO 2019/108156 A1

[Continued on next page]

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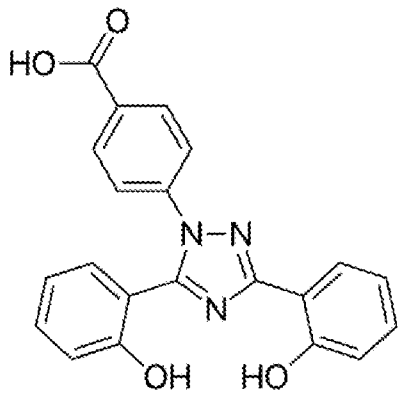
A SCORED TABLET FORMULATION COMPRISING DEFERASIROX IN A FILM TABLET FORM

Technical Field

The present invention is related to a scored tablet formulation in a film tablet form comprising deferasirox or a pharmaceutically acceptable salt of deferasirox.

Prior Art

Deferasirox is the first of a new group iron chelatagents in the form of tridentate, which is used by oral route in the treatment of chronic iron overload and which is named with 4-[3,5-Bis(2-hydroxyphenyl)-1H-1,2,4-triazole-1-yl]benzoic acid chemical formula; and characterized by the formula-1 indicated below.



Formula-1

Deferasirox is disclosed firstly in the patent application having the number of **US6465504**.

Deferasirox is the first medicine approved for iron overload treatment which is an approved molecule in 2005 by FDA (Food and Drug Administration).

Iron is important for formation of new red blood cells. However, excessive iron by taken into the body with various reasons causes accumulation of iron in several tissues and this causes several health problems. There are a lot of reasons which can result in iron overload in the body. We can exemplify these like genetic reasons, excessive iron overload,

inflammations in body. One of the reasons of excessive iron accumulation in the body is also hereditary hemochromatosis. It is known that this disease results from a mutation in gene which regulates how much iron the body needs for iron absorption. Furthermore, if there is hereditary anemia disease in patient, a high iron problem may occur due to the treatment. When anemia occurs in case of the body cannot produce enough amount of blood cell, the body starts to absorb high amount of iron and the problem of iron overload occurs. Once again, the cases like sideroblastic anemia, thalassemia major and absence of pyruvate kinase, also stand in the several diseases that can cause iron load. Consuming iron pills that are sold in pharmacies unconsciously also causes iron accumulation and therefore may lead to iron excess. Furthermore, intaking of blood via blood transfusion may also cause accumulation of iron in the body. Even though blood transfusion is lifesaving via providing erythrocyte to whom it requires, it is very rich by means of iron. In persons who frequently have blood transfusion, the body has difficulties to absorb excess of iron received and this may result in excessive accumulation of iron. Because of these situations, deferasirox is indicated in the treatment of chronical iron loading (transfusional hemosiderosis) due to blood transfusion in children aged 2 and above and in grown-ups, also is indicated in the treatment of chronical iron loading in patients aged 10 and above who have thalassemia symptoms not dependent on transfusion.

Deferasirox is a molecule which is known as an alternative to deferoxamine which is a standard treatment option that is used via the parenteral route in the treatment of iron overload. It is found out that, chelation treatment is effective for removing iron quickly, reducing iron stores to a low level, inhibiting heart and other organ damage that results from iron overload and effective for prolonging survival in patients who have chronical iron poisoning. Deferasirox has been prepared in tablet form which is taken once a day. It is considered that it is a molecule which is more suitable for long-term use and thereby enhances to manage chronical iron poisoning. In addition to this, it may enhance significantly the life quality of patients who have to get iron chelation treatment during all their lifetimes.

In the European Patent numbered **EP0914118B1**, deferasirox is being described wherein the usage of it is disclosed for treatment of diseases that cause iron overload. In this document, a tablet comprising 200 mg of active agent, a coated tablet comprising 400 mg

of active agent, hard gelatin capsule comprising 500 mg of active agent, oral suspension powder comprising 300 mg of active agent is disclosed. Even though it is disclosed dispersible form of deferasirox in the said document, the amounts of excipients used in addition to the 500 mg of deferasirox active agent disclosed in the document are different from the amounts of excipients used in the invention. Furthermore, formulation of dividable scored tablet form of deferasirox is not disclosed in said document. Likewise, the pharmaceutical form is not a film tablet mentioned in the said document.

The European patent application numbered **EP1734924** is pertained to a formulation comprising deferasirox or pharmaceutically acceptable salt thereof in an amount of from 42% to 65% by weight based on the total tablet weight. It is mentioned that 125 mg and 1000 mg deferasirox dispersible tablet in the document. However, the amounts of some excipients (filler, disintegrant and lubricant) used in the document beside of deferasirox active agent are different from the amounts of excipients which used in the invention. Additionally, the pharmaceutical form is not a film tablet mentioned in said document. Beside of this, a dividable scored tablet formulation of deferasirox is not disclosed in the said document.

The European patent application numbered **EP1940360** is pertained to a dispersible tablet form wherein deferasirox or a pharmaceutically acceptable salt thereof in an amount of from 42% to 65% by weight based on the total tablet weight. In this document a dispersible tablet, having a total weight of 2000 mg ± 5%, comprising deferasirox in an amount of 1000 mg ± 5%, is disclosed. Moreover, a dispersible tablet comprising 800 mg deferasirox, is disclosed. However, the amounts of some excipients (filler, disintegrant and lubricant) used beside of deferasirox active agent are different from the amounts of excipients which used in the invention. Additionally, the pharmaceutical form is not a film tablet mentioned in said document. Beside of this, a dividable scored tablet formulation of deferasirox is not disclosed in said document.

The European patent application numbered **EP2964202** is related to an orally administrable pharmaceutical form which does not comprise sodium lauryl phosphate and lactose. In the document is disclosed deferasirox or a pharmaceutically acceptable salt thereof, present in an amount of from 45% to 60% by weight based on the total tablet

weight. Release of said medicine has been reduced under gastric conditions and has been fast at near neutral pH or at neutral pH. In the document is disclosed a pharmaceutical form which comprises deferasirox and at least one pharmaceutically acceptable excipient. It is seen in the document, deferasirox is present in an amount of from 45% to 60% by weight based on the total tablet weight. The disclosed ratio of the deferasirox in the said document is different from used in the invention. Beside of this, a dividable scored tablet formulation of deferasirox is not disclosed in said document.

The European patent application numbered **EP3124018A1** is a divisional application of the cited patent above. In the patent application, the tablets comprise deferasirox is disclosed present in an amount of from 45% to 60% by weight based on the total tablet weight. Furthermore, tablets comprise 90 mg, 180 mg or 360 mg deferasirox and excipients in various ratios in said document. The disclosed ratio of the deferasirox in the said document is different from used in the invention. In addition to this, the ratios of disintegrant and lubricant used as excipients are different from the amount of excipients which used in the invention. Beside of this, a dividable scored tablet formulation of deferasirox is not disclosed in said document.

The patent application numbered **WO2017158559 A1** is mentioned tablets comprising deferasirox molecule in the ratio of less than 45% and more than 60%. Moreover, the composition is disclosed in said document, having a reduced release under gastric conditions and fast release at near neutral pH or at neutral pH. However, a dividable scored tablet formulation of deferasirox is not disclosed in said document.

The dose of the deferasirox to be administered to the patient is dependent on several factors like patient's age, weight, the level of iron accumulation, interaction with the other used drugs if any. The doses to be administered (as mg/kg) are calculated by checking the clinical monitoring indications and applied by adapting them to the closest tablet dose. Recommended initial dose in treatment is 20 mg/kg; it is 30 mg/kg in the grownups who gets erythrocyte transfusion and whose iron load is aimed to be reduced, and 10 mg/kg in the grownups who gets erythrocyte suspension and whose iron load is aimed to be continued at the same level. It is required to watch the levels of serum ferritine monthly and according to the results of this follow-up, drug dosage must be adjusted in every 3-6

months if needed. Under these situations, if the patient is required to get a higher or lower dose of the drug than same level dose which he uses continuously when he wants to get a different dose, he is needed to buy the tablet comprising a different dose.

In the state of the art, commercial dose forms as three different dosages of 90 mg, 180 mg and 360 mg which are comprising deferasirox active agent are present which commercialized by Novartis. However, there is no pharmaceutical product in the form of a scored film tablet which provides at least one dosage, preferably allowing two dosages on the same tablet and no suitable formulation to obtain this product in the state of the art.

Said this drugs comprising deferasirox in the prior art are substantially expensive. Besides that, when the present drug dose alternatives checked, there is no option in the market for using the individual's required dose in a single package. For example, if a 360 mg drug is prescripted by the doctor, according to the healing condition of the patient, the dose of the drug may desired to reduce by the doctor. Similarly, the doctor may not know the side effects of the pharmaceutical product on the patient. Therefore, he may prescribe the drug having the lowest dose initially. In addition, after a specific treatment period, the doctor may desire to increase this dose. This also causes difficulties in writing prescriptions. In the state of the art, there is no pharmaceutical product in the film tablet form comprising deferasirox, having different amount of doses in a single tablet which an individual may use a suitable dose in a single package. Moreover, when a patient takes the recommended dose of the doctor and starts treatment, in the case of a need of dose adjustment, he has to reach the doctor again and make the prescription in another dose form drug written. On the reason that this situation is tiring for the patient, he may not want to go to the doctor again. And this also causes, failure of treatment and decrease of patient comfort. Therefore, for this product comprising deferasirox active agent, the need of improving a pharmaceutical product occurred in a single tablet at least one dose, preferably two doses.

In addition, all of the solid dosage pharmaceutical products manufactured in the state of the art comprise at least one active ingredient. In order for this pharmaceutical product to be easy and convenient to use for the patient and to be produced successfully, the active ingredient or components must be produced with at least one excipient. The excipients which are indispensable to many solid dosage forms and provide a functionality

to the product can be binders, diluents, disintegrants, coloring agents (or colourants), coaters; but not limited to these listed in pharmaceutical products. The appropriate selection of excipients to be used in addition to the active ingredient is very important in order to increase the patient's comfort of solid dosage form pharmaceutical product.

Similarly, deferasirox formulations need to be developed to increase the effectiveness, bioavailability, properties and efficiency of the deferasirox molecule used for deferasirox formulations. Therefore, for improving deferasirox oral tablet formulations, it is necessary to select appropriate excipient to be used in addition to deferasirox. In addition, similarly, the amount of excipients must also be appropriate.

On the other hand, it is a desired situation that the stability of pharmaceutical products to be high. Pharmaceutical products are exposed to a number of transformations in their structure over time when they are exposed to environmental impacts like temperature, moisture, light. To understand these transformations, several stability tests must be done. The aims of the stability tests are; to provide evidence of change occurring in the quality of an active agent or product by several environmental factors like temperature, moist and light over time; to determine the active agent retest period or to determine the shelf life and recommended storage conditions of the product. The changes in stability may be chemical, physical and microbiological. For the changes of stability to be minimum and for a high quality of the product, it is required to select the excipients to be used in the pharmaceutical product also appropriate.

Brief Description of the Invention

The aim of the invention is to provide a formulation comprising deferasirox or a pharmaceutically acceptable salt of deferasirox in the form of a tablet, preferably film tablet.

The tablet manufactured by disclosed formulation is non-scored or preferably scored film tablet. The scored film tablet form product may be divided at least into two. The number of dose is at least one; preferably two for a scored film tablet formulation. According to the pharmaceutical form, these doses in the invention are 90 mg, 180 mg, 360 mg in a scored film tablet. Thus, with the scored film tablet, the user is able to supply the different dose recommended by the doctor without purchasing another commercial dose form. Thereby,

the user can take any one of these three doses as recommended by the doctor. Therefore, with the disclosed scored pharmaceutical product, also patient comfort is going to increase.

For improving film tablet forms comprising deferasirox, at least one excipient is used in a proper amount with deferasirox in the invention. By means of the invention, a pharmaceutical product is developed in a form which is easier to produce than the state of the art, using the different ratio of deferasirox and /or at least one suitable selected excipient according to this ratio. Similarly, the producibility and production efficiency of deferasirox formulations have been enhanced by the formulation of the present invention.

Once again, for the changes of stability to be minimum of the disclosed pharmaceutical product, excipients which are used in the formulation and their ratios are selected appropriately.

Detailed Description of the Invention:

Description of the Figures

Figure 1: Schematic top view of pharmaceutical product subject to the invention.
Figure 2: Schematic side view of pharmaceutical product subject to the invention.

Description of the References in the Figures:

The parts in the figures are numbered individually and the equivalents of these numbers are given below for understanding of the invention.

1- Product

10- Unit Dose

11- Score

The present invention is related to a formulation in a tablet form, preferably a film tablet form, comprising deferasirox which is known that 4-[3,5-Bis(2- hydroxyphenyl)-1H-1,2,4-triazole-1-yl]benzoic acid as chemical name or a pharmaceutically acceptable salt of deferasirox for the treatment of situations occurring with excessive amounts of iron accumulation in the body.

For the scored (≦1) form of the pharmaceutical product (1) manufactured by disclosed formulation, there is a national patent application with the application number of TR

2017/07764 filed on 29.05.2017. In the said application, dividable scored (11) tablet forms are disclosed for doses of 90 mg, 180 mg and 360 mg; and also 125 mg, 250 mg ve 500 mg of deferasirox or a pharmaceutically acceptable salt of deferasirox.

In the patent application with the application number of 2017/07764; a pharmaceutical product (1) with the scored (11) film tablet form comprising the doses of 90 mg, 180 mg ve 360 mg has been disclosed. In the present invention, a formulation for obtaining the said product (1) is mentioned.

Deferasirox or a pharmaceutically acceptable salt of deferasirox used as the active agent (active ingredient or active substance) in the invention is an iron chelating agent.

The disclosed pharmaceutical formulation comprises one active agent and at least one excipient. According to properties of the active agent such as flow, compressibility, dissolution, stability and bioavailability, the excipients to be used in the disclosed formulation and amounts thereof are selected in accordance with the active substance. The active agent in the invention is deferasirox or a pharmaceutically acceptable salt of deferasirox. The pharmaceutical formulation comprises excipients; at least one filler and/or at least one disintegrant and/or at least one binder and/or at least one surfactant and/or at least one glidant and/or at least one lubricant and/or at least one granulation solvent and/or at least one coating agent and/or at least one coating solvent, but are not limited to the described herein. The disclosed formulation comprises preferably microcrystalline cellulose (Type 101) and/or preferably microcrystalline cellulose (Type 102) as filler and/or preferably crospovidone as disintegrant and/or preferably povidone K30 as binder and/or preferably poloxamer 188 as surfactant and/or preferably colloidal silicon dioxide as glidant and/or preferably magnesium stearate as lubricant and/or preferably pure water as granulation solvent and/or preferably hydroxypropyl methylcellulose (HPMC) as coating agent based on coating mixture and/or pure water as coating solvent but are not limited to the described in the invention.

The pharmaceutical product (1) having disclosed formulation is in tablet form. In the preferred embodiment of the invention, the pharmaceutical product (1) comprises at least one dividable unit dose (10) and at least one score (11) that provides divisibility. In said

this application, pharmaceutical product (1) may be in a tablet form or preferably in a film tablet form. The tablet is the pharmaceutical product (1) preferably in a film tablet form and with non-scored or preferably scored(11).

In the preferred embodiment of the invention, pharmaceutical product (1) is in the form of Figure-1 and it preferably comprises 4 pieces of unit dose (10) but not limited to this. A unit dose (10) comprises deferasirox or a pharmaceutically acceptable salt of deferasirox. Said score (11) is in the form of "+" but not limited to this and when the patient holds a part of the product (1) and applies force to one of the unit doses (10) in another part of the product (1), unit dose (10) can be broken easily from the score (11). In one embodiment of the invention, the product (1) can be divided into two from the score (11). In said embodiment, the product (1) remaining in two-unit doses (10) after being divided into two parts, and when a force again is applied to one of this two-unit doses (10), the remained part can also be divided into two and totally it can be divided into four equal unit doses (10). In other words, when a patient applies a force on the product (1), the product (1) can be divided into two or three or four parts from the score (11) easily. Thereby, different unit doses (10) can be provided from one product (1) by score (11). Therefore, dose flexibility can be provided with the invention. In another embodiment of the present invention, said score (11) is positioned so as to allow for equal dosing of the pharmaceutical product (1) and to allow for the cross-section of the pharmaceutical product (1). Every dividable unit dose (10) is equivalent to each other as amount of dose and in one embodiment the amount of deferasirox or a pharmaceutically acceptable salt thereof at each unit dose (10) is minimum 90 mg. Pharmaceutical product (1) may be in a large variety of tablet forms. The product (1) obtained from the pharmaceutical formulation is in a pharmaceutical form which the user can use quite easily.

The amounts by weight and its ratio according to the total tablet weight of the active ingredients and excipients of the formulation to which the invention is applied are given in Table-1. In one embodiment of the invention, the formulation preferably in the form of scored (11) film tablet comprises from 5 % to 95 % by weight based on the total tablet weight of deferasirox or a pharmaceutically acceptable salt thereof. In another embodiment of the invention, the amount of the deferasirox or a pharmaceutically acceptable salt thereof is from 20 % to 60 %. In another embodiment of disclosed formulation comprises preferably from 39.9 % to 44.1 % and more preferably 42 % by weight based on the total

tablet weight, deferasirox or a pharmaceutically acceptable salt thereof. In addition to deferasirox, it comprises from 20 % to 90 %, preferably 42.5 % by weight based on the total tablet weight microcrystalline cellulose as filler and/ or from 2 % to 20 %, preferably 7.0 % by weight based on the total tablet weight, crospovidone as disintegrant, and/ or from 1 % to 5 %, preferably 2.3 % by weight based on the total tablet weight, povidone K30 as binder and/ or from 0.1% to 5 %, preferably 0.1 % by weight based on the total tablet weight, poloxamer 188 as surfactant and/ or from 0.01 % to 5 %, preferably 0.5 % by weight based on the total tablet weight, colloidal silicon dioxide as glidant and/ or from 2.3 % to 5 %, preferably 2.4 % by weight based on the total tablet weight, magnesium stearate as lubricant and/ or from 2 % to 10 %, preferably 2.8 % by weight based on the total tablet weight , film coating agent.

Table-1

Ingredients	**% amount of based on total film tablet weight**	**% in unit formula**	**Intended use**
Deferasirox	20-44	% 42.0	Active agent
Microcrystalline cellulose	20-90	% 42.5	Filler
Crospovidone	2-20	% 7.0	Disintegrant
Povidone K30	1-5	% 2.3	Binder
Poloxamer 188	0.1-5	% 0.1	Surfactant
Colloidal silicon dioxide	0.01-5	% 0.5	Glidant
Magnesium stearate	2.3-5	% 2.4	Lubricant
Film coating agent	2-10	% 2.8	Coating agent

In order to increase the efficiency of deferasirox in the invention, not limited to the above mentioned rates, also other ratios may be used except ratios of said excipient.

The lubricants used in the formulation are used to prevent the mixture of the tablet from sticking to the staples during the tablet press process. In the preferred embodiment of the invention, when from 2.3 % to 5 % by weight of magnesium stearate is used as the

lubricant, the tablet printing is greatly easy during the production stage. The binders used in the formulation are used to hold the components together in the formulation. The binders directly affect the rate of dissolution of the active agent, the hardness, brittleness and dispersion of the tablets. In the preferred embodiment of the invention, povidone K30 is used as the binder. The filler is used to bring the tablets to suitable size for using easily and to press the tablets easily. When 20 % to 90% of microcrystalline cellulose is used as the filler in the invention, the tablets can be compressed very easily. The disintegrants allow the tablets to disperse in the stomach or intestinal environment. In the preferred embodiment of the invention, crospovidone is used as the disintegrant. The surfactants are used to accelerate the dissolution of the active agent. In the preferred embodiment of the invention, poloxamer 188 is used as the surfactant. The glidants facilitate the flow of powders and granules. In the preferred embodiment of the invention colloidal silicon dioxide is used as the glidant. In addition, pure water is used as the granulation solvent in the invention.

Furthermore, the producibility and production efficiency of the pharmaceutical products (1) produced by the disclosed formulation were increased by using the appropriate excipients at the effective ratios beside of the deferasirox.

When the said excipients in the invention are used in specific proportions indicated in Table 1, the change in the physical and chemical stability of the pharmaceutical product (1) is also small.

In preferred embodiment of the invention, when the amount of deferasirox or a pharmaceutically acceptable salt thereof in each unit dose (10) is 90 mg, the total amount of deferasirox or a pharmaceutically acceptable salt thereof in the pharmaceutical product (1) is 360 mg.

On the reason that pharmaceutical product (1) has a dividable scored (11) form one embodiment of the invention, the doctor can easily adjust the dose according to the need of patient at the initial and continuation of the treatment. In this case, a patient who uses a dose form of 360 mg, can take the dose recommended by the doctor from the same package, without purchasing a commercial dose comprising another dose form. The user

can reach 180 mg of active agent dose via dividing the 360 mg pharmaceutical product (1) into two unit dose (10). In this case, the user starting from a high dose (for example 360 mg) can achieve to a low dose (for example 180 mg) by dividing the pharmaceutical product (1) from its score (11). Thus, when the doctor desires to change the dose, the economical loss resulting from the disposal of the pharmaceutical product (1) which user does not use is minimized. The most important factor that provides divisibility of the product (1) in a unit dose (10) is the score (11). Another physical factor that provides the divisibility of the scored product (1) in a unit dose (10) is hardness. In order to obtain the desired amount of dose from the said pharmaceutical product (1) and to divide the product (1) into desired unit dose (10), the pharmaceutical product (1) is compressed with the predetermined pressure force (for instance in the hardness of 10 to 20 kp). Thus, the product (1) can be divided easily by the user by applying pressure to the score (11).

The invention is not limited to the disclosed embodiments above, a skilled person in the art can produce different embodiments of the invention easily. They should be evaluated within the scope of the invention protection demanded with claims.

CLAIMS

1. A pharmaceutical oral formulation **comprising** deferasirox which is an iron chelat agent or a pharmaceutically acceptable salt of deferasirox and at least one pharmaceutically acceptable excipient; **characterized in that**, deferasirox or a pharmaceutically acceptable salt thereof from 5 % to 95 % by weight based on the total tablet weight, in the form of a scored (11) film tablet.
2. The pharmaceutical oral formulation according to Claim 1, **characterized in that**, it comprises deferasirox or a pharmaceutically acceptable salt thereof from 20 % to 60 % by weight based on the total tablet weight.
3. The pharmaceutical oral formulation according to Claim 2, **characterized in that**, it comprises deferasirox or a pharmaceutically acceptable salt thereof from 39.9 % to 44.1 %; preferably 42 % by weight based on the total tablet weight.
4. The pharmaceutical oral formulation according to Claim 3, **characterized in that**, it comprises at least one filler and/or at least one disintegrant and/or at least one binder and/or at least one surfactant and/or at least one glidant and/or at least one lubricant and/or at least one film coating agent.
5. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 20 % to 90 % by weight based on the total tablet weight of filler.
6. The pharmaceutical oral formulation according to Claim 5, **characterized in that**, it comprises from 42.5 % by weight based on the total tablet weight of filler.
7. The pharmaceutical oral formulation according to Claim 6, **characterized in that**, it comprises microcrystalline cellulose as filler.
8. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 2.3 % to 5 % by weight based on the total tablet weight of lubricant.
9. The pharmaceutical oral formulation according to Claim 8, **characterized in that**, it comprises 2.4 % by weight based on the total tablet weight of lubricant.
10. The pharmaceutical oral formulation according to Claim 9, **characterized in that**, it comprises magnesium stearate as lubricant.
11. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 2 % to 20 % by weight based on the total tablet weight of disintegrant.

12. The pharmaceutical oral formulation according to Claim 11, **characterized in that**, it comprises 7.0 % by weight based on the total tablet weight of disintegrant.
13. The pharmaceutical oral formulation according to Claim 12, **characterized in that**, it comprises crospovidone as disintegrant.
14. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 1 % to 5 % by weight based on the total tablet weight of binder.
15. The pharmaceutical oral formulation according to Claim 14, **characterized in that**, it comprises 2.3 % by weight based on the total tablet weight of binder.
16. The pharmaceutical oral formulation according to Claim 15, **characterized in that**, it comprises povidone K30 as binder.
17. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 0.1 % to 5 % by weight based on the total tablet weight of surfactant.
18. The pharmaceutical oral formulation according to Claim 17, **characterized in that**, it comprises 0.1 % by weight based on the total tablet weight of surfactant.
19. The pharmaceutical oral formulation according to Claim 18, **characterized in that**, it comprises poloxamer 188 as surfactant.
20. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 0.01 % to 5 % by weight based on the total tablet weight of glidant.
21. The pharmaceutical oral formulation according to Claim 20, **characterized in that**, it comprises 0.5 % by weight based on the total tablet weight of glidant.
22. The pharmaceutical oral formulation according to Claim 21, **characterized in that**, it comprises colloidal silicon dioxide as glidant.
23. The pharmaceutical oral formulation according to Claim 4, **characterized in that**, it comprises from 2 % to 10 % by weight based on the total tablet weight of film coating agent.
24. The pharmaceutical oral formulation according to Claim 23, **characterized in that**, it comprises 2.8 % by weight based on the total tablet weight of film coating agent.

Figure-1

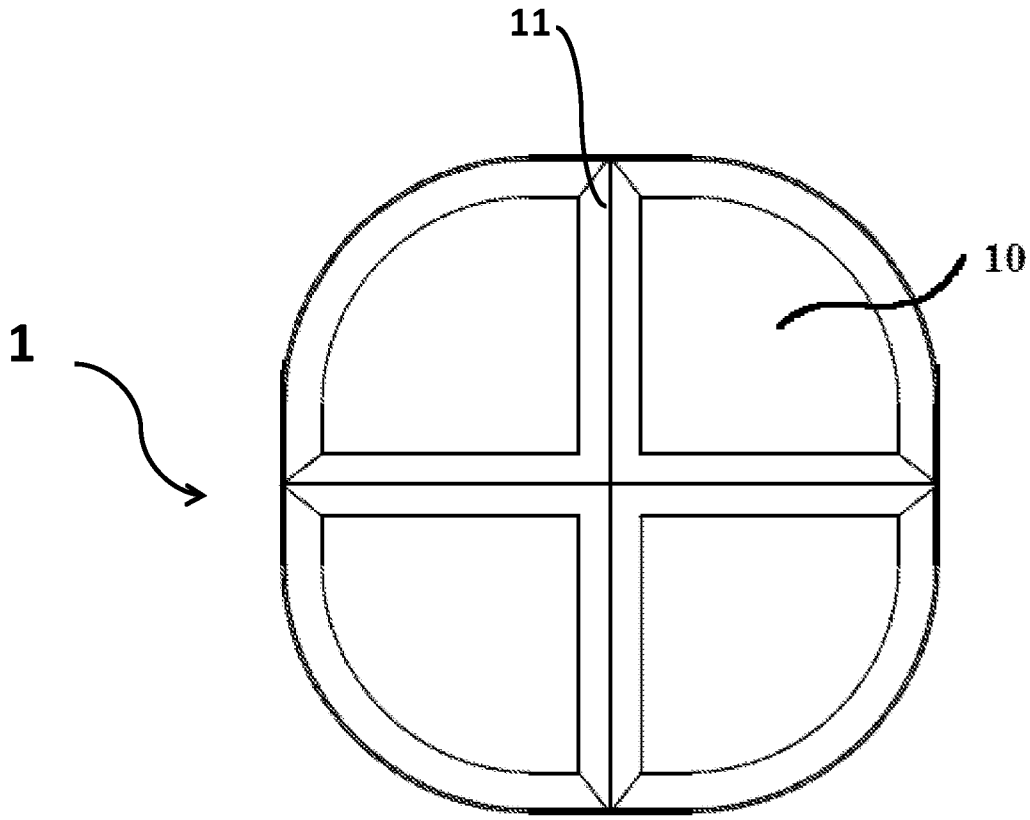
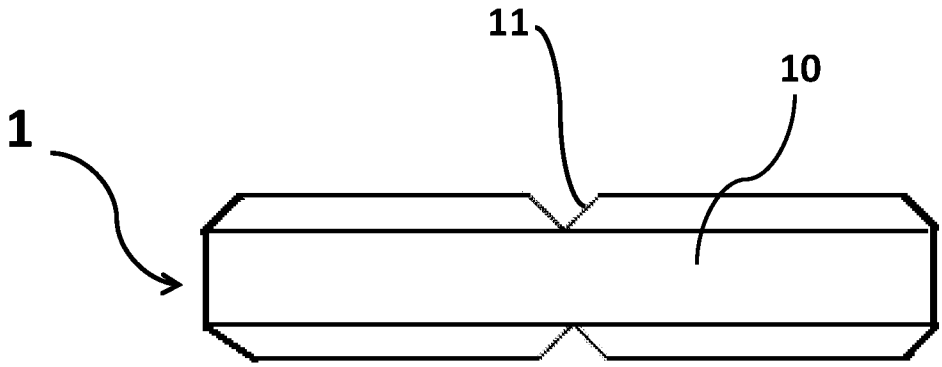


Figure-2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/TR2018/050653

A. CLASSIFICATION OF SUBJECT MATTER

A61K 9/28 (2006.01)i; A61K 31/4196 (2006.01)i; A61K 47/00 (2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2014147503 A1 (CIPLA LTD [IN]; COTTRILL EMILY [GB]) 15 May 2014 (2014-05-15) Description paragraph [0084], example 1	1-24
Y	EP 1556013 A1 (NOVARTIS AG [CH]; NOVARTIS PHARMA GMBH [AT]) 27 July 2005 (2005-07-27) Description paragraph [0001], [0012], [0019] [0042], [0052], example 2	1-24
Y	EP 2964202 A1 (NOVARTIS AG [CH]) 13 January 2016 (2016-01-13) Description paragraph [0017], [0019]	1-24

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 May 2019	**20 May 2019**

Name and mailing address of the ISA/TR	Authorized officer
Turkish Patent and Trademark Office (Turkpatent) **Hipodrom Caddesi No. 115** **06560 Yenimahalle** **Ankara** **Turkey** Telephone No. **(90-312) 303 11 82** Facsimile No. **+903123031220**	**Zümrüt YAR** Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/TR2018/050653

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
US 2014147503 A1	15 May 2014	CA 2812505 A1	05 April 2012
		WO 2012042224 A2	05 April 2012
		AU 2011309872 A1	11 April 2013
		MX 2013003522 A	22 May 2013
		CN 103209687 A	17 July 2013
		EP 2621471 A2	07 August 2013
		JP 2013538845 A	17 October 2013
		EC SP13012534 A	31 October 2013
		ZA 201302092 B	27 November 2013
		KR 20140011300 A	28 January 2014
		PE 01662014 A1	17 February 2014
		NZ 608380 A	31 October 2014
		RU 2013120275 A	20 November 2014
		RU 2589842 C2	10 July 2016
		AP 3578 A	08 February 2016
		US 2016158202 A1	09 June 2016
		BR 112013007276 A2	14 June 2016
		US 2016324831 A1	10 November 2016
		PE 04682017 A1	26 April 2017
		IL 225457 A	30 April 2017
		US 2017312254 A1	02 November 2017
		MY 165826 A	17 May 2018
		US 2018311216 A1	01 November 2018
EP 1556013 A1	27 July 2005	WO 2004035026 A1	29 April 2004
		CA 2501659 A1	29 April 2004
		AU 2003278078 A1	04 May 2004
		TW 200410949 A	01 July 2004
		TW I339657 B	01 April 2011
		PE 04962004 A1	20 September 2004
		PA 8586501 A1	04 February 2005
		AR 041609 A1	26 May 2005
		MX PA05003999 A	22 June 2005
		EC SP055733 A	06 July 2005
		KR 20050071578 A	07 July 2005
		KR 100765580 B1	09 October 2007
		NO 336958 B1	07 December 2015
		NO 20052335 L	15 July 2005
		BR 0315264 A	23 August 2005
		PL 375166 A1	28 November 2005
		PL 213325 B1	28 February 2013
		ZA 200502488 B	30 November 2005
		CN 1705471 A	07 December 2005
		RU 2005114904 A	27 January 2006
		RU 2338532 C2	20 November 2008
		JP 2006504748 A	09 February 2006
		US 2006110446 A1	25 May 2006
		NZ 539354 A	27 April 2007
		TN TN A1	14 May 2007
		AT 431138 T	15 May 2009
		PT 1556013 E	10 August 2009

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/TR2018/050653

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
		DK	1556013	T3	17 August 2009
		ES	2326167	T3	02 October 2009
		SI	1556013	T1	31 October 2009
		HK	1081101	A1	31 December 2009
		MY	140999	A	12 February 2010
		JP	2010031022	A	12 February 2010
		CN	101912391	A	15 December 2010
		US	2011046193	A1	24 February 2011
		US	2011319457	A1	29 December 2011
		EG	25453	A	19 January 2012
		US	2012196909	A1	02 August 2012
		JO	2700	B1	03 March 2013
		JP	2014088417	A	15 May 2014
		JP	5908505	B2	26 April 2016
		CY	1109902	T1	10 September 2014
		IL	167709	A	31 May 2015
		JP	2016094435	A	26 May 2016
		US	2016175255	A1	23 June 2016
EP 2964202 A1	13 January 2016	NONE			