**Description**

**A COMPOSITION FOR THE TREATMENT OF B CELL DEFICIENCY**

**Technical Field**

The invention relates to a composition formed for the treatment of B cell deficiency.

**State of the Art**

B cells are the lymphocytes that play a great role in the humoral immune response. Every day, the human body produces millions of different types of B cell and each type has on its membrane a unique receptor protein capable of binding to a particular antigen. In the human body, millions of B cells circulate through the blood and the lymph without producing antibodies. When any B cell encounters an antigen and receives an additional signal from a helper T cell, it differentiates into one of the two different B cell types defined below. The B cells may either directly convert into one of these cell types or they may also convert after an intermediate step.

[The plasma B cells produce the antibodies, which assist in the degradation of the antigens by binding to the antigens and thus rendering the antigens to which they bind easier targets for the phagocytes. The memory B cells are formed specifically for the antigens encountered during the initial immune response and they stay alive for a long time. These cells may respond rapidly in case the cells to which they are associated are detected again.](http://tr.wikipedia.org/wiki/Plazma_B_h%C3%BCcresi)

The B cell deficiency is currently attempted to be treated by means of the exogenous immunoglobulin therapy administered via the intravenous route or by means of the stem cell therapy, which is yet in an experimental state.

According to the patent no. EP1368044B1 with the classification "A61K 35/74" entitled "Immunomodulator for the management of the human immunodeficiency virus (hiv) disease/infection”, the human immunodeficiency virus causes the depletion of the CD4 cells. Due to the decrease in immunity, various opportunistic infections occur. These infections are the cause for morbidity and mortality in the hiv-infected individuals. The hiv treatment for these includes the antiretroviral drugs. These drugs have their own side effects and the immune reconstitution achieved is delayed and slow. Various attempts have been made to improve the Cd4 count. Use of IL-2 is one of these. It is associated with systemic side effects during the period of its administration. The present invention provides immunomodulator based on Mycobacterium w. Its use is also associated with symptomatic improvement as well as improvement in immunity as evidenced by improved CD4 count in HIV infected individuals.

According to the invention no. EP1490355B1 entitled "Indolylmaleimide derivatives", provided are compounds of Formula (I), which are useful in the treatment and/or prevention of diseases or disorders mediated by T lymphocytes and/or PKC, e.g. acute or chronic rejection of organ or tissue allo- or xenografts, graft versus host diseases, atherosclerosis, vascular occlusion due to vascular injury such as angioplasty, restenosis, obesity, syndrome X, impaired glucose tolerance, polycystic ovary syndrome, hypertension, heart failure, chronic obstructive pulmonary disease, CNS diseases such as Alzheimer disease or amyotrophic lateral sclerosis, cancer, infectious diseases such as AIDS, septic shock or adult respiratory distress syndrome, ischemia/reperfusion injury e.g. myocardial infarction, stroke, gut ischemia, renal failure or hemorrhage shock, or traumatic shock, e.g. traumatic brain injury. The compounds represented by Formula (I) are also useful in the treatment and/or prevention of T-cell mediated acute or chronic inflammatory diseases or disorders or autoimmune diseases e.g. rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, Hashimoto’s thyroiditis, multiple sclerosis, myasthenia gravis, diabetes type I or II and the disorders associated therewith, e.g. angiopathy, diabetic proliferative retinopathy, diabetic macular edema, nephropathy, neuropathy and dawn phenomenon, respiratory diseases such as asthma or inflammatory lung injury, inflammatory liver injury, inflammatory glomerular injury, cutaneous manifestations of immunologically-mediated disorders or illnesses, inflammatory and hyperproliferative skin diseases (such as psoriasis, atopic dermatitis, allergic contact dermatitis, irritant contact dermatitis and further eczematous dermatitises, seborrhoeic dermatitis), inflammatory eye diseases (e.g. Sjoegren’s syndrome, keratoconjunctivitis or uveitis), inflammatory bowel disease, Crohn’s disease or ulcerative colitis.

The invention no. EP1370539B1 entitled "Hiv-inhibiting n-aminoimidazole derivatives" relates to the discovery of novel N-aminoimidazole and N-aminoimidazole-thione derivatives. The invention also relates to the compounds having HIV (Human Immunodeficiency Virus) inhibiting properties. The invention also relates to compounds having antiviral activities with respect to other viruses, as well as compounds having antitumoral properties. The invention also relates to methods for preparation of all such compounds and pharmaceutical compositions comprising them. The invention further relates to the use of said compounds in the manufacture of a medicament useful for the treatment of subjects suffering from HIV infection, as well as for treatment of other viral, retroviral or lentiviral infections, treatment of animals suffering from FIV, viral, retroviral, lentiviral infections or treatment of tumor cells.

As a result, the presence of the need for a composition for treating the B cell deficiency and the inadequacy of the existing solutions have made it necessary to perform an improvement in the relevant art.

**Object of the Invention**

In order to eliminate the disadvantages of the state of the art, an object of the invention is to increase the plasma B cell mRNA expression.

Another object of the invention is to increase the reaction efficiency of the memory B cells and to support the prolongation of their active lifetime.

In order to achieve the aforesaid advantages, the invention is a composition for the treatment of the B cell deficiency, said composition being obtained by the components selected from the group comprising (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone, (5α,6α,7α,22R)-6,7- Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone, 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricycic acid δ-lactone that are used individually or in combinations.

The structural and characteristic features and all the advantages of the invention will become more clearly understood from the detailed description provided below and therefore, the evaluation must be made taking this detailed description into consideration.

**Detailed Description of the Invention**

The invention is a composition formed for the treatment of B cell deficiency. The composition according to the invention increases the plasma B cell mRNA expression. The associated formulation increases the reaction efficiency of the memory B cells and supports the prolongation of their active lifetime.

The composition according to the invention contains (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone, (5α,6α,7α,22R)-6,7- Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone , 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricyclic acid δ-lactone.

Said formulation is obtained by a mixture of the aforesaid components according to the following ratios by weight:

10-22% (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone,

26-68% (5α,6α,7α,22R)-6,7-Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone,

64-10% 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricyclic acid δ-lactone

The composition is obtained from the aforesaid components selected from the aforesaid group and used according to the mentioned weight ratio ranges individually or in combinations.

Said invention also encompasses the use of said composition for treating the B cell deficiency and the manufacture thereof for this purpose.

**CLAIMS**

1. A composition for the treatment of B cell deficiency, said composition being obtained by the components selected from the group comprising (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone, (5α,6α,7α,22R)-6,7- Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone, 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricycic acid δ-lactone that are used individually or in combinations.
2. A composition according to Claim 1 characterized in that it comprises 10-22% by weight (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone.
3. A composition according to Claim 1 characterized in that it comprises 26-68% by weight (5α,6α,7α,22R)-6,7- Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone.
4. A composition according to Claim 1 characterized in that it comprises 64-10% by weight 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricyclic acid δ-lactone.
5. Use of the components according to Claims 1 to 4 obtained individually or in combinations from the group consisting of (5α,6α,7α,22R)-6,7-Epoxy-7,18,22-dimethoxy-11-keto-ergosta-20,24-dien-26-oic acid δ-lactone, (5α,6α,7α,22R)-6,7- Epoxy-5,20,22-oxo-ergosta-2,24-dien-26-oic acid δ-lactone, 5,6-bis(3-ketoethyl)(2,24)-dien-26-tricylic acid δ-lactone **for the manufacture of a composition for treating the B cell deficiency**.

**ABSTRACT**

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The invention relates to a composition formed for the treatment of B cell deficiency.

No figure.