**Description**

**A COMPOSITION COMPRISING OXYDERRICIN DERIVATIVES THAT EXHIBIT THE CHARACTERISTIC OF SUPPRESSING RNA LIGASE AND THE USE OF THIS COMPOSITION IN THE TREATMENT OF BACTERIAL INFECTIONS**

**Technical Field**

The invention relates to a composition comprising oxyderricin derivatives formed for suppressing RNA ligase and the use of this composition in the treatment of bacterial infections.

**State of the Art**

Ligase is an enzyme that forms a chemical bond between two large molecules to join the same; generally a small chemical group belonging to one of these large molecules is hydrolyzed during the reaction. The aforementioned three-step mechanism seen in DNA ligases is also present in RNA ligases. The enzymes that attach the 5’ cap to the messenger RNA apply only the first two of these three steps and they use RNA in place of DNA and GTP in place of ATP. The structures of the active regions of these enzymes are also similar. Since one of the reaction steps that they catalyze is the addition of a nucleotide to a nucleic acid, these enzyme families collectively form the upper family of nucleotidyl tranferase enzyme.

According to the state of the art, the invention no. WO 1997/006806 entitled "Use of prostane derivatives and the combinations thereof with antibiotics in the treatment of bacterial infections" relates to the use of prostane derivatives of general formula I and laprostane derivatives in the optional adjuvant treatment of bacterially induced meningitis, and also the combination of prostane derivatives with antibiotics wherein X1 is a -CH2-CH2, trans-CH=CH- or -C=C- group, X2 is a linear or branched saturated hydrocarbon chain having from 1 to 6 carbon atoms, X3 is an -O- or -CH2- group, X4 is a -CH2- or -(CH2)3- group, X5 is a hydrogen atom or a -C=C-R2 group, R1 is a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, a cycloalkyl group having 5 or 6 carbon atoms or a phenyl group, R2 is a linear or branched, saturated or unsaturated hydrocarbon chain having from 1 to 6 carbon atoms, R3 is a hydrogen atom, an acyl radical having from 1 to 4 carbon atoms or a benzyl radical, and R4 is a hydrogen atom or a methyl group; the -O-R3- group being in the α- or β-configuration, and their salts with physiologically tolerable bases when R1 represents a hydrogen atom.

As a result, the presence of the need for a composition for suppressing RNA ligase 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 suppress RNA ligase.

Another object of the invention is to enable the suppression of ribonucleotide reductase.

Another object of the invention is to enable the suppression of deoxyadenosine methylase.

Another object of the invention is to enable the suppression of DNA polymerase.

Another object of the invention is to enable the suppression of DNA gyrase.

In order to achieve the aforesaid advantages, the invention is a composition for suppressing RNA ligase, said composition being obtained by the components selected from the group comprising (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin, (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl-oxyderricin-arginate 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 suppressing RNA ligase comprising oxyderricin derivatives that exhibit the characteristic of suppressing RNA ligase and the use of this composition in the treatment of bacterial infections. Said composition enables the suppression of RNA ligase, the suppression of ribonucleotide reductase, the suppression of deoxyadenosine methylase, the suppression of DNA polymerase and the suppression of DNA gyrase.

The composition according to the invention contains (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin, (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl- oxyderricin-arginate.

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

1-99% (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin,

99-1% (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl-oxyderricin-arginate.

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 suppressing RNA ligase and the manufacture thereof for this purpose.

**CLAIMS**

1. A composition for suppressing RNA ligase, said composition being obtained by the components selected from the group comprising (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin, (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl-oxyderricin-arginate that are used individually or in combinations.
2. A composition according to Claim 1 characterized in that it comprises 1-99% by weight (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin.
3. A composition according to Claim 1 characterized in that it comprises 99-1% by weight (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl- oxyderricin-arginate.
4. Use of the components according to Claims 1 to 3 obtained individually or in combinations selected from the group consisting of (1S,​2'R,​4E,​5'R,​5R,​6'S,​7S,​8R,​10S,​11S,​12R,​14S,​15R,​16S,​17E,​20E,​22S,​25R,​28R,​29S)-​20-​methyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​12,​15-​trihydroxy-​6'-​[(1Z)-​2-​hydroxy-​1-​propen-​1-yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​hexamethyl-oxyderricin, (1S,​2'R,​4E,​5'R,​6R,​6'S,​7S,​9R,​10S,​11S,​13R,​14S,​15R,​18S,​19E,​20E,​22S,​25R,​27R,​29S)-​10-​ketoethyl-​3',​4',​5',​6'-​tetrahydro-​7,​11,​14,​15-​tetrahydroxy-​6'-​[(1Z)-​2-​epoxy-​1-​propen-​1-​yl]-​5',​6,​8,​10,​12,​14,​16,​28,​29-​nonamethyl-oxyderricin-arginate for the manufacture of a composition for suppressing RNA ligase.

**ABSTRACT**

**A COMPOSITION COMPRISING OXYDERRICIN DERIVATIVES THAT EXHIBIT THE CHARACTERISTIC OF SUPPRESSING RNA LIGASE AND THE USE OF THIS COMPOSITION IN THE TREATMENT OF BACTERIAL INFECTIONS**

The invention relates to a composition comprising oxyderricin derivatives that exhibit the characteristic of suppressing RNA ligase and the use of this composition in the treatment of bacterial infections.

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