PROPYNYLAMINOINDAN TRANSDERMAL COMPOSITIONS

CROSS-REFERENCE TO RELATED APPLICATIONS

Pursuant to 35 U.S.C. §119(e), this application claims priority to the filing date of United States Provisional Application Serial No. 61/722,044 filed November 2, 2012, the disclosure of which is herein incorporated by reference.

INTRODUCTION

Monoamine oxidases (MAOs) are enzymes that catalyze the oxidation of monoamines, such as monoaminergic neurotransmitters, including dopamine. Because of the role that MAOs play in the inactivation of neurotransmitters, MAO dysfunction (e.g., too much or too little MAO activity) is thought to be responsible for a number of neurological disorders. For example, unusually high or low levels of MAOs in the body have been associated with depression, schizophrenia, substance abuse, attention deficit disorder, migraines, and irregular sexual maturation.

MAOs are found in two main types, MAO type A (MAO-A) and MAO type B (MAO-B). MAO-B is more prevalent in the brain, where it is responsible for the breakdown of dopamine after its release into the synapse. Parkinson's disease is characterized by the death of cells that use dopamine to transmit their signals, which results in a decrease in overall synaptic signal strength and an increase in the symptoms associated with Parkinson's disease.

Rasagiline (i.e., (R)-N-(prop-2-ynyl)-2,3-dihydro-1H-inden-1-amine or R(+)-N-propargyl-1-aminoindan (trade name Azilect®)) is an irreversible inhibitor of monoamine oxidase (MAO) and is selective for MAO type B over MAO type A. By inhibiting the breakdown of dopamine in the synapse, rasagiline permits the signaling neurons to reabsorb more of the released dopamine for reuse later, which may compensate for the diminished quantities of dopamine being produced.

SUMMARY

Propynylaminoindan (e.g., Rasagiline) transdermal compositions are provided. ~~Aspects of t~~The transdermal compositions may include a matrix which includes the propynylaminoindan, a pressure sensitive adhesive that includes an acrylate

copolymer and a cationic acrylic copolymer. Also provided are methods of using the transdermal compositions and kits containing the transdermal compositions.

In a first aspect of the present disclosure, there is provided a transdermal composition, the composition comprising:

(A) a matrix comprising:

(i) a propynylaminoindan; and

(ii) a pressure sensitive adhesive comprising:

(a) an acrylate copolymer that lacks pendant functional groups; and

(a) a cationic acrylic copolymer; and

(B) a backing.

In a second aspect of the present disclosure, there is provided a use of a transdermal composition as defined above in the manufacture of a medicament for achieving a therapeutic flux of the propynylaminoindan over an extended period of time.

In a third aspect of the present disclosure, there is provided a kit comprising two or more transdermal compositions as defined above.

In a fourth aspect of the present disclosure, there is provided a transdermal composition as defined above for use in achieving a therapeutic flux of the propynylaminoindan over an extended period of time.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a cross sectional view of an embodiment of the transdermal active agent formulation described herein.

Figures 2A to 2B provide graphs of flux as a function of time (middle point between the two sampling time points) for various formulations.

DETAILED DESCRIPTION

Propynylaminoindan (e.g., Rasagiline) transdermal compositions are provided. Aspects of the transdermal compositions include a matrix which includes the propynylaminoindan, a pressure sensitive adhesive that includes an acrylate copolymer and a cationic acrylic copolymer. Also provided are methods of using the transdermal compositions and kits containing the transdermal compositions.

Before the present invention is described in greater detail, it is to be understood that this invention is not limited to particular embodiments described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting, since the scope of the present invention will be limited only by the appended claims.

Where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limit of that range and any other stated or intervening value in that stated range, is encompassed within the invention. The upper and lower limits of these smaller ranges may independently be included in the smaller ranges and are also encompassed within the invention, subject to any specifically excluded limit in the stated range. Where the stated range includes one or both of the limits, ranges excluding either or both of those included limits are also included in the invention.

Certain ranges are presented herein with numerical values being preceded by the term "about." The term "about" is used herein to provide literal support for the exact number that it precedes, as well as a number that is near to or approximately

16. The transdermal composition according to any of the preceding claims, wherein the matrix has a single layer configuration.

17. The transdermal composition according to any of the preceding claims, wherein the composition further comprises a release liner.

18. The transdermal composition according to any of the preceding claims, wherein the composition is storage stable.

19. Use of a transdermal composition according to any of Claims 1 to 18 in the manufacture of a medicament for ~~A method comprising:~~

~~applying to a skin surface of a subject a transdermal composition according to any of Claims 1 to 18 in a manner sufficient to~~ achieveing a therapeutic flux of the propynylaminoindan over an extended period of time.

20. A kit comprising two or more transdermal compositions according to any of Claims 1 to 18.

21. A transdermal composition according to any of Claims 1 to 18 for use in achieving a therapeutic flux of the propynylaminoindan over an extended period of time.