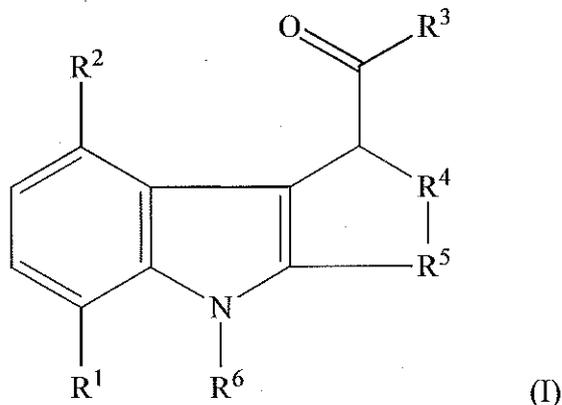


We Claim:

- (1) A composition comprising a compound of Formula I:



wherein:

R¹ is hydrogen, C₁₋₃ alkyl, C₁₋₃ alkoxy, or halo;

R² is hydroxyl, halo, cyano, C₁₋₃ alkyl, C₁₋₃ alkoxy, C₁₋₃ fluoroalkyl, or C₁₋₃ fluoroalkoxy;

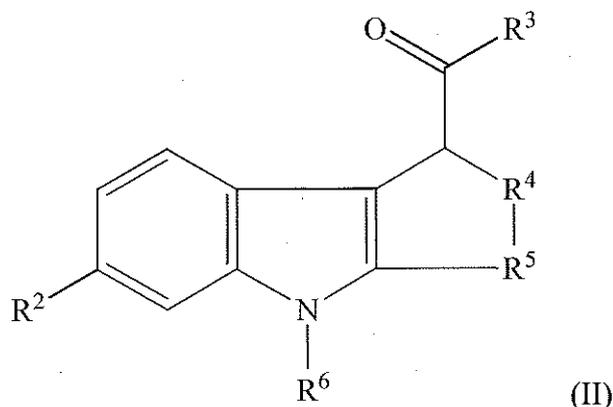
R³ is -N-R⁷R⁸ wherein R⁷ and R⁸ are hydrogen, C₁₋₆ alkyl, C₇₋₁₀ arylalkyl or, together with R⁷, forms a nitrogen-containing C₄₋₆ aliphatic ring;

R⁴ is O, S, SO, SO₂ or CH₂;

R⁵ is CH₂, CH₂-CH₂, CH(CH₃)-CH₂ or CH₂-CH₂-CH₂;

R⁶ is -A¹-R⁹ wherein A¹ is a bond or C₁₋₁₀ alkylene, and R⁹ is hydrogen, fluoro or a leaving group, or R⁹ is the group -O-R¹⁰ wherein R¹⁰ is hydrogen, C₁₋₃ alkyl, C₃₋₆ aryl, C₇₋₁₀ arylalkyl, or a hydroxyl protecting group;

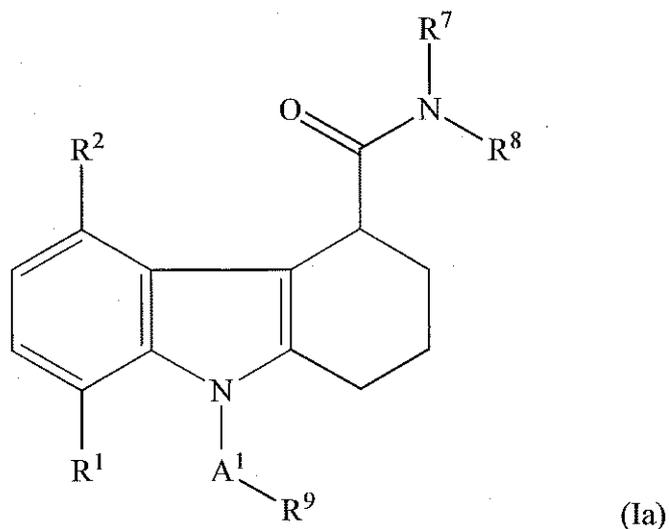
wherein said composition comprises no more than 1% of a compound of Formula II:



wherein R² to R⁶ are as defined for Formula I

and wherein each of said compound of Formula I and said compound of Formula II are present in said composition as a racemic mixture.

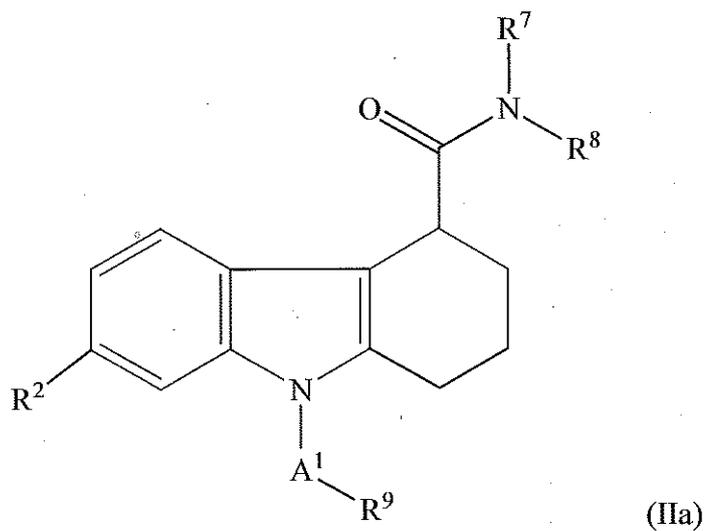
- (2) The composition as Claimed in claim 1 wherein said compound of Formula I is a compound of Formula Ia:



wherein:

R^1 , R^2 , R^{7-9} and A^1 are as defined in Claim 1;

and said compound of Formula II is a compound of Formula IIa:



wherein each of R^2 , R^7 , R^8 , R^9 and A^1 are as defined for Formula Ia.

- (3) The composition as claimed in Claim 2 wherein:

R^1 is hydrogen;

R^2 is fluoro or methoxy;

R^7 and R^8 are C_{1-6} alkyl;

R^9 is hydrogen, fluoro or a leaving group; and,

A^1 is C_{1-10} alkylene.

(4) The composition as claimed in either Claim 2 or Claim 3 wherein:

R¹ is hydrogen;

R² is methoxy;

R⁷ and R⁸ are C₁₋₃ alkyl;

R⁹ is [¹⁸F]fluoro or an aryl or alkyl sulfonate; and,

A¹ is C₁₋₃ alkylene.

(5) The composition as claimed in any one of Claims 2-4 wherein:

R¹ is hydrogen;

R² is methoxy;

R⁷ and R⁸ are methyl or ethyl;

R⁹ is [¹⁸F]fluoro, tosylate, triflate, nosylate or mesylate; and,

A¹ is C₁₋₃ alkylene.

(6) The composition as claimed in any one of Claims 2-5 wherein:

R¹ is hydrogen;

R² is methoxy;

R⁷ and R⁸ are both ethyl;

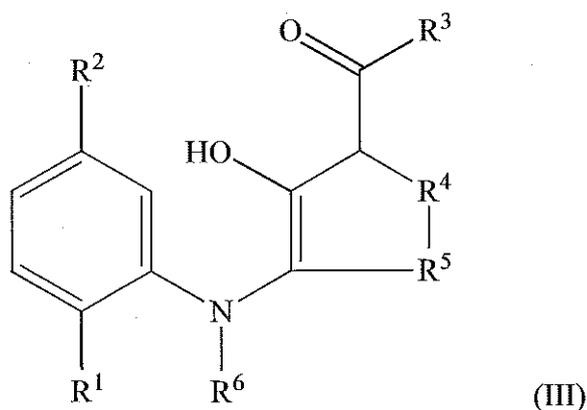
R⁹ is [¹⁸F]fluoro or mesylate; and,

A¹ is ethylene.

(7) A method to obtain the composition as claimed in any one of Claims 1-6 wherein said method comprises crystallization of a reaction mixture comprising said compound of Formula I as defined in Claim 1, and said compound of Formula II as defined in Claim 1, wherein said crystallization is carried out in a suitable organic solvent in the presence of a catalytic amount of a weak organic base in order to obtain said composition.

(8) The method as claimed in Claim 7 wherein said weak organic base is selected from N,N-diisopropyl ethylamine or diethyl amine.

- (9) The method as claimed in either Claims 7 or Claim 8 wherein said reaction mixture is obtained using a method comprising cyclization of a compound of Formula III:



wherein:

R¹⁻⁶ are as defined in Claim 1;

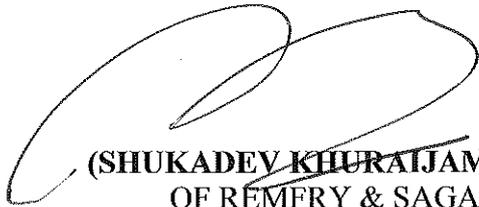
wherein said cyclization is carried out by reaction of said compound of Formula III with a zinc halide.

- (10) A pharmaceutical composition comprising the composition as claimed in any one of Claims 1-6 together with a biocompatible carrier suitable for mammalian administration.
- (11) Use of the pharmaceutical composition as claimed in Claim 10 in a medical method.
- (12) The use as claimed in Claim 11 wherein said medical method is treatment of a pathological condition.
- (13) The use as claimed in Claim 13 wherein said medical method is diagnosis of a pathological condition.
- (14) A method of *in vivo* imaging comprising:
- (i) administering to a subject the pharmaceutical composition as defined in Claim 10 wherein R⁹ is [¹⁸F]fluoro;

- (ii) detecting signals emitted by the [^{18}F]fluoro comprised in said pharmaceutical composition;
- (iii) generating an image representative of the location and/or amount of said signals.

(15) A kit comprising the composition as claimed in Claim 1 wherein R^6 is $-\text{A}^1-\text{R}^9$ wherein A^1 is a bond or C_{1-10} alkylene, and R^9 is a leaving group.

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