Claims

1. A diagnostic drug comprising at least one compound selected from a deuterated natural branched-chain amino acid derivative and / or a pharmaceutically acceptable salt of a deuterated natural branched-chain amino acid derivative for use in the diagnosis of diseases by deuterium magnetic resonance imaging and / or deuterium magnetic resonance spectroscopy.

2. The diagnostic drug according to the claim 1, which additionally comprises at least one pharmaceutically acceptable auxiliary substance.

3. The diagnostic drug according to the claim 1, in which the deuterated natural branched-chain amino acid derivative is deuterated valine or deuterated leucine or deuterated isoleucine.

4. The diagnostic drug according to the claim 3, in which the deuterated valine is valine-4,4,4-d_3, valine-4,4,4,4',4',4'-d_6, valine-3,4,4,4,4',4',4'-d_7, valine-2,4,4,4,4',4',4'-d_7, valine-2,3,4,4,4,4',4',4'-d_8.

5. The diagnostic drug according to the claim 1, in which the deuterated derivative is wholly or predominantly represented by an enantiomer with 2S configuration.

6. The diagnostic drug according to the claim 1, in which the deuterated natural branched-chain amino acid derivative is

- a mixture of at least two different deuterated derivatives of valine or its pharmaceutically acceptable salts; or
- a mixture of at least two different deuterated derivatives of leucine or its pharmaceutically acceptable salts; or
- a mixture of at least two different deuterated derivatives of isoleucine or its pharmaceutically acceptable salts; or
- a mixture of at least two different deuterated derivatives of valine, leucine and / or isoleucine and / or their pharmaceutically acceptable salts.

7. The diagnostic drug according to the claim 1, which includes

- a deuterated derivative of a natural branched-chain amino acid containing deuterium atoms bonded to carbon atoms in more than one position, or a pharmaceutically acceptable salt thereof; or
- a mixture of deuterated derivatives of natural branched-chain amino acids and / or their pharmaceutically acceptable salts, with deuterated derivatives containing deuterium atoms in structurally nonequivalent positions.

8. Use of the diagnostic drug according to any one of claims 1-7 in the manufacture of a diagnostic agent for diagnosing a disease in a subject, wherein the disease is an inflammatory process, an infectious process, a process accompanied by active regeneration, a disease associated with ischemia of organs and tissues, a graft rejection reaction, an autoimmune disease, or an oncological disease, wherein:

the diagnostic drug is to be administered to the subject;

a magnetic resonance imaging and / or deuterium magnetic resonance spectroscopy is to be carried out after a time sufficient for the diagnostic drug accumulation in a target tissue, to obtain, respectively, a tomogram and / or NMR spectrum (spectra).

9. The use according to claim 8, wherein the presence or absence of the disease is to be diagnosed based on the observed signal intensity of deuterium nuclei, reflecting the level of accumulation of the diagnostic drug.

10. The use according to the claim 8 or 9, in which the disease is an oncological disease.

11. The use according to the claim 8 or 9, in which at least one additional medical examination is to be performed, selected from magnetic resonance imaging on nuclei other than deuterium nuclei, ultrasound examination, computed tomography, radiography, palpation, biopsy, analysis of biological material of the subject for tumor markers, radionuclide diagnostics and / or visual observation.

12. The use according to the claim 8 or 9, wherein the presence or absence of the disease is to be diagnosed based on comparing the signal intensity of deuterium nuclei in the subject under examination with the typical signal intensity observed in healthy subjects in a corresponding tissue or corresponding organ.

13. The use according to the claim 8 or 9, wherein the presence or absence of the disease is to be diagnosed based on a comparison of the deuterium signal intensity in regions corresponding to normal and abnormal tissue according to additional medical examination data.

14. The use according to the claim 8 or 9, in which the diagnostic drug comprising a deuterated derivative of a natural branched- chain amino acid containing deuterium atoms in more than one position or a mixture of deuterated derivatives of a natural branched- chain amino acids containing deuterium atoms in structurally nonequivalent positions, and in which the level of metabolic activity and / or proliferation of cells of a target tissue is additionally assessed based on a comparison of the intensity of signals of deuterium nuclei in structurally nonequivalent positions.

15. The use according to the claim 11, wherein the presence or absence of the disease is to be diagnosed based on the comparison of the deuterium tomogram of the subject under examination with the image obtained as a result of protium magnetic resonance imaging of the subject.

16. The use according to the claim 10, wherein the spatial distribution of the region with increased accumulation of the diagnostic drug is to be used to make a conclusion about the structure of a tumor.

17. The use according to the claim 10, in which the intensity of the deuterium signal in the region of increased accumulation of the diagnostic drug is to be used to make a conclusion about the malignancy or benignity of a tumor.

18. The use according to the claim 8 or 9, wherein the rate of deuterium signal intensity change after injection is to be used to make a conclusion about the level of perfusion in different parts of the scanned region.

19. The use according to the claim 8 or 9, wherein the diagnostic drug is to be administered to the subject per os.

20. The use according to the claim 8 or 9, wherein the diagnostic drug is to be administered to the subject parenterally.