Claims

1. A diagnostic drug comprising at least one compound selected from a deuterated derivative of sarcosine and / or a pharmaceutically acceptable salt of a deuterated derivative of sarcosine for use in the diagnosis of diseases by deuterium magnetic resonance imaging and / or deuterium magnetic resonance spectroscopy, wherein the deuterated derivative is defined as a compound containing deuterium bound to carbon in an amount exceeding its natural amount in at least one position.

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

3. The diagnostic drug according to claim 1, additionally comprising an inhibitor of sarcosine metabolism and / or an inhibitor of sarcosine membrane transport.

4. The diagnostic drug according to claim 3, wherein the sarcosine membrane transport inhibitor is glycine or proline.

5. The diagnostic drug according to claim 1, wherein the deuterated derivative of sarcosine is sarcosine-4,4,4-d_3, sarcosine-2,2-d_2, sarcosine-2,2,4,4,4-d_5.

6. The diagnostic drug according to claim 1 which comprises a mixture of at least two different compounds selected from a deuterated derivative of sarcosine and / or a pharmaceutically acceptable salt of a deuterated derivative of sarcosine.

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

- a deuterated derivative of sarcosine containing deuterium atoms in both the 2nd and 4th positions, or a pharmaceutically acceptable salt thereof; or
- a mixture of deuterated derivatives of sarcosine and / or their pharmaceutically acceptable salts, where there is at least one deuterated derivative, which contains deuterium atoms in the 2nd position, and at least one deuterated derivative, which contains deuterium atoms in the 4th position.

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 oncological disease, wherein:

a) the diagnostic drug is to be administered to the subject;

b) a magnetic resonance imaging and / or deuterium magnetic resonance spectroscopy is carried out after a time sufficient for the diagnosis 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 a 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 claim 8 or 9, wherein the oncological disease is a cancer tumor.

11. The use according to claim 10, wherein the cancer tumor is a solid tumor or tumor metastases, including lymph node metastases.

12. The use according to claim 10 or claim 11, wherein the cancer tumor is a breast cancer.

13. The use according to claim 12, wherein the cancer tumor is 4T1 breast carcinoma tumor.

14. The use according to any one of claims 8 to 13, wherein 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.

15. The use according to any one of claims 8 to 13, 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.

16. The use according to any one of claims 8 to 13, 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.

17. The use according to any one of claims 8 to 13, which uses the diagnostic drug that includes

- a deuterated derivative of sarcosine containing deuterium atoms in both the 2nd and 4th positions, or a pharmaceutically acceptable salt thereof; or
- a mixture of deuterated derivatives of sarcosine and / or their pharmaceutically acceptable salts, wherein at least one deuterated derivative is present, which contains deuterium atoms in the 2nd position, and at least one deuterated derivative, which contains deuterium atoms in the 4th position,

and where the level of metabolic activity and / or proliferation of cells of a target tissue is to be additionally estimated based on a comparison of the intensity of deuterium signals in the 2nd and in the 4th position.

18. The use according to any one of claims 8 to 13, wherein the presence or absence of the disease is to be diagnosed based on the comparison of a deuterium tomogram of the subject under examination with an image obtained as a result of protium magnetic resonance imaging of the subject.

19. The use according to any one of claims 8 to 13, wherein the spatial distribution of a region with increased accumulation of the diagnostic drug is to be used to make a conclusion about the structure of a tumor.

20. The use according to any one of claims 8 to 13, wherein the intensity of the deuterium signal in a region of increased accumulation of the diagnostic drug is to be used to make a conclusion about the malignancy or benignity of a tumor.

21. The use according to any one of claims 8 to 13, wherein the diagnostic drug is to be administered to the subject per os.

22. The use according to any one of claims 8 to 13, wherein the diagnostic drug is to be administered to the subject parenterally.

23. The use according to any one of claims 8 to 13, wherein the magnetic resonance imaging and / or deuterium magnetic resonance spectroscopy is to be performed 10-180 minutes after the diagnostic drug is to be administered.