particular embodiment, the cancer treatment is a cancer treatment to treat colorectal cancer, i.e. the patient subject to the cancer treatment is a patient suffering from colorectal cancer.

The administration of the histamine-producing lactic acid bacterial strains to the patient does, however, not necessarily have to cause a 100 % treatment of the colorectal cancer in the patient, i.e. resulting in a patient without any detectable tumors at all. Thus, the histamine-producing lactic acid bacterial strains could be used to inhibit or reduce colorectal cancer in the patient. For instance, experimental data as presented herein indicate that the histamine-producing lactic acid bacterial strains are capable of decreasing the numbers of tumors and decreasing the sizes of the tumors. Accordingly, inhibition or reduction of colorectal cancer comprises, in embodiments, decreasing the numbers of tumors in the patient, decreasing the sizes of tumors in the patient or decreasing the numbers and sizes of tumors in the patient. Thus, in an embodiment, the histamine-producing lactic acid bacterial strain is for use in reducing numbers of and/or sizes of tumors in a patient suffering from colorectal cancer.

The histamine-producing lactic acid bacterial strains of the embodiments could also, or alternatively, be used in prophylaxis, i.e. to reduce the risk of a patient developing colorectal cancer. The patient could, for instance, be a patient having a predisposition to colorectal cancer, such as a genetic or heredity predisposition to colorectal cancer. The histamine-producing lactic acid bacterial strains could then be administered to such a patient to prevent or at least reduce the risk of the patient suffering from colorectal cancer.

The histamine-producing lactic acid bacteria strains of the embodiments also have beneficial characteristics for patients having suffered from colorectal cancer and that have been treated for the colorectal cancer. The histamine-producing lactic acid bacterial strains can thereby be used to reduce the risk of relapse of the colorectal cancer.

In an embodiment, the histamine-producing lactic acid bacterial strain is for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of an inflammation-associated colorectal cancer.

The patient is preferably a mammalian patient and more preferably a human patient. In a particular embodiment, the patient is a male human patient. Thus, in this embodiment, the histamine-producing lactic acid bacterial strain is for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of colorectal cancer in a male patient.

histamine and DagK is of huge interest to treat pro-inflammatory disorders with myeloid dysfunction.

In an embodiment, selecting the lactic acid bacterial strain comprises selecting a lactic acid bacterial strain, for use in prophylaxis, inhibition or treatment of an inflammatory condition selected from a group consisting of colitis, inflammatory bowel disease, irritable bowel syndrome, diverticulosis, gingivitis, mastitis and vaginitis, identified as a lactic acid bacterial strain having an active histidine operon and being capable of producing histamine and producing DagK.

Thus, the above disclosed inflammatory conditions are illustrative, but preferred examples of inflammatory conditions that can be prevented, inhibited or treated by lactic acid bacterial strains identified and selected as disclosed herein.

In an embodiment, the method of selecting a lactic acid bacterial strain for use in prophylaxis, inhibition or treatment of an inflammatory condition comprises identifying and selecting a lactic acid bacterial strain other than *L. reuteri* ATCC PTA-4659 and ATCC PTA-6475.

Further aspects of the embodiments relates to a *Lactobacillus reuteri* DSM 32273, which is a histamine- and DagK-producing *L. reuteri* strain.. *Lactobacillus reuteri* strain DSM 32273 was deposited under the Budapest Treaty at the DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH (Inhoffenstrasse 7B, D - 38124 Braunschweig) on March 8, 2016. This new *L. reuteri* DSM 32273 may be used as a medicament. For instance, *L. reuteri* DSM 32273 can be used in prophylaxis, inhibition, treatment or reducing a risk of relapse of cancer. In a particular embodiment, the cancer is a histamine-associated cancer selected from a group consisting of colorectal cancer, melanoma, breast cancer and pancreas cancer, preferably colorectal cancer. *L. reuteri* DSM 32273 can also be used in prophylaxis, inhibition or treatment of an inflammatory condition. In a particular embodiment, the inflammatory condition is selected from a group consisting of colitis, inflammatory bowel disease, irritable bowel syndrome, diverticulosis, gingivitis, mastitis and vaginitis. Further uses of *L. reuteri* DSM 32273 include amelioration of infantile colic, alleviation of eczema, reduction of episodes of workplace illness, suppression of Heliobacter pylori infection.

The embodiments also include use of a histamine-producing lactic acid bacterial strain for the manufacture of a medicament for prophylaxis, inhibition, treatment or reducing a risk of

CLAIMS

1. A histamine-producing lactic acid bacterial strain for use in prophylaxis, inhibition, treatment or reducing a risk of relapse a histamine-associated cancer, wherein said histamine-producing lactic acid bacterial strain is capable of producing a diacylglycerol kinase (DagK).

2. The histamine-producing lactic acid bacterial strain for use according to claim 1, wherein said histamine-producing lactic acid bacterial strain is for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of a histamine-associated cancer, wherein the histamine-associated cancer is selected from a group consisting of colorectal cancer, melanoma, breast cancer and pancreas cancer.

3. The histamine-producing lactic acid bacterial strain for use according to claims 1 or 2, wherein said histamine-producing lactic acid bacterial strain is for use in reducing number of and/or a size of tumors in a patient suffering from a histamine-associated cancer.

4. A histamine-producing lactic acid bacterial strain for use in combination with a cancer treatment, wherein said cancer treatment is selected from a group consisting of radiotherapy and chemotherapy, wherein said histamine-producing lactic acid bacterial strain is capable of producing a diacylglycerol kinase (DagK).

5. A histamine-producing lactic acid bacterial strain for use in prophylaxis, inhibition or treatment of a gastrointestinal disturbance associated with a cancer treatment selected from a group consisting of radiotherapy and chemotherapy, wherein said histamine-producing lactic acid bacterial strain is capable of producing a diacylglycerol kinase (DagK).

6. The histamine-producing lactic acid bacterial strain for use according to any of the claims 1 to 5, wherein said histamine-producing lactic acid bacterial strain comprises an active histidine operon.

7. The histamine-producing lactic acid bacterial strain for use according to any of the claims 1 to 6, wherein said histamine-producing lactic acid bacterial strain is a histamine-producing *Lactobacillus reuteri* strain.

8. The histamine-producing lactic acid bacterial strain for use according to claim 7, wherein said histamine-producing *Lactobacillus reuteri* strain is selected from a group consisting of *Lactobacillus reuteri* ATCC PTA-6475, Lactobacillus reuteri ATCC PTA-4659 and Lactobacillus reuteri DSM 32273.

9. A method of selecting a lactic acid bacterial strain for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of colorectal cancer, said method comprising:

screening lactic acid bacteria for presence of an active histidine operon and a capability of producing a DagK; and

selecting said lactic acid bacterial strain comprises selecting a lactic acid bacterial strain for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of colorectal cancer identified as a lactic acid bacterial strain having an active histidine operon and being capable of producing histamine and producing DagK.

10. A method of selecting a lactic acid bacterial strain for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of cancer, said method comprising:

screening lactic acid bacteria for presence of an active histidine operon and a capability of producing a DagK; and

selecting a lactic acid bacterial strain for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of a histamine-associated cancer selected from a group consisting of colorectal cancer, melanoma, breast cancer, and pancreas cancer identified as a lactic acid bacterial strain having an active histidine operon and being capable of producing histamine and producing DagK.

11. A method of selecting a lactic acid bacterial strain for use in prophylaxis, inhibition or treatment of an inflammatory condition, said method comprising:

screening lactic acid bacteria for presence of an active histidine operon and a capability of producing a diacylglycerol kinase (DagK); and

selecting a lactic acid bacterial strain for use in prophylaxis, inhibition or treatment of an inflammatory condition identified as a lactic acid bacterial strain having an active histidine operon and being capable of producing histamine and producing DagK.

12. The method according to claim 11, wherein selecting said lactic acid bacterial strain comprises selecting a lactic acid bacterial strain, for use in prophylaxis, inhibition or treatment of an inflammatory condition selected from a group consisting of colitis, inflammatory bowel disease, irritable bowel syndrome, diverticulosis, gingivitis, mastitis and vaginitis, identified as a lactic acid bacterial strain having an active histidine operon and being capable of producing histamine and producing DagK.

13. A histamine producing lactic acid bacterial strain capable of producing DagK, wherein said bacterial strain is a *Lactobacillus reuteri* strain having been deposited under DSMZ Accession No. DSM 32273.

14. A histamine producing lactic acid bacterial strain capable of producing DagK, wherein said bacterial strain is a *Lactobacillus reuteri* strain having been deposited under DSMZ Accession No. DSM 32273 for use as a medicament.

15. The *Lactobacillus reuteri* DSM 32273 according to claim 13 or 14 for use in preventing or treating a histamine-associated cancer.

16. The *Lactobacillus reuteri* DSM 32273 according to claim 13 or 14 for use in prophylaxis, inhibition, treatment or reducing a risk of relapse of cancer.

17. The *Lactobacillus reuteri* DSM 32273 for use according to claim 15, wherein said cancer is a histamine-associated cancer selected from a group consisting of colorectal cancer, melanoma, breast cancer, and pancreas cancer, preferably colorectal cancer.

18. The *Lactobacillus reuteri* DSM 32273 according to claim 13 or 14 for use in prophylaxis, inhibition or treatment of an inflammatory condition.

19. The *Lactobacillus reuteri* DSM 32273 for use according to claim 18, wherein said inflammatory condition is selected from a group consisting of colitis, inflammatory bowel disease, irritable bowel syndrome, diverticulosis, gingivitis, mastitis and vaginitis.