

Patent Document 2 or the flavor improving agent used in Patent Document 3 may be added the yogurt mix as an additive. In a case where the additive is added to the yogurt mix at a certain rate, however, there is a possibility that the yeast extract which is a material of the additive may damage the original flavor of the yogurt. Therefore, in the case where the culture of the bacteriocin-producing lactic acid bacterium is added to the yogurt mix, it is desirable that the amount of culture to be added should be made as small as possible.

#### Disclosure of Invention

[0011] The present ~~disclosureinvention~~ is intended for a method for culturing lactic acid bacterium. According to the present ~~disclosureinvention~~, the method for culturing lactic acid bacterium comprises a culture solution preparation step of preparing a culture solution containing whey degraded by a proteolytic enzyme and a culture step of inoculating bacteriocin-producing lactic acid bacterium into the culture solution and culturing the lactic acid bacterium while maintaining the culture solution inoculated with the lactic acid bacterium at pH of not lower than 5 and not higher than 6.

[0012] By the method for culturing lactic acid bacterium according to the present ~~disclosureinvention~~, it is possible to obtain a culture solution having antibacterial activity which is about several tens times as high as the culture solution obtained by the prior-art culturing method. In other words, by the method for culturing lactic acid bacterium of the present ~~disclosureinvention~~, it is possible to produce a bacteriocin with high efficiency.

[0013] The present ~~disclosureinvention~~ is also intended for a method for producing fermented milk. According to the present ~~disclosureinvention~~, the method for producing fermented milk comprises a raw material milk producing step of producing a yogurt mix, a concentrated cell suspension producing step of culturing a bacteriocin producer which is

bacteriocin-producing lactic acid bacterium to thereby produce a concentrated cell suspension containing the bacteriocin producer in a concentrated form, an addition step of adding not less than 0.01% and not more than 0.1% by weight of the concentrated cell suspension, based on the total weight of the yogurt mix, to the yogurt mix, and a fermentation step of fermenting the yogurt mix to which the concentrated cell suspension is added, and in the method of the present invention, the concentrated cell suspension producing step includes a culture solution preparation step of preparing a culture solution containing whey degraded by a proteolytic enzyme, a culture step of inoculating the bacteriocin producer into the culture solution and culturing the bacteriocin producer while maintaining the culture solution inoculated with the bacteriocin producer at pH of not lower than 5 and not higher than 6, and a separation step of separating the concentrated cell suspension from the culture solution inoculated with the bacteriocin producer.

[0013a] In an aspect, there is provided a method for producing fermented milk, comprising: a raw material milk producing step of producing a yoghurt mix; a concentrated cell suspension producing step of culturing a bacteriocin producer which is bacteriocin-producing lactic acid bacterium to thereby produce a concentrated cell suspension containing said bacteriocin producer in a concentrated form; an addition step of adding not less than 0.01% and not more than 0.1 % by weight of said concentrated cell suspension, based on the total weight of said yoghurt mix, to said yoghurt mix; and a fermented step of fermenting said yoghurt mix to which said concentrated cell suspension is added, wherein said concentrated cell suspension producing step includes: a culture solution preparation step of preparing a culture solution containing whey degraded by a proteolytic enzyme and yeast extract; a culture step of inoculating said bacteriocin producer into said culture solution and culturing said bacteriocin producer while maintaining said culture solution inoculated with said bacteriocin producer at pH of not lower than 5 and not higher than 6; and a separation step of separating said concentrated cell suspension from said culture solution in which said bacteriocin producer is cultured.

[0014] By the method for producing fermented milk according to the present ~~disclosureinvention~~, the amount of concentrated cell suspension to be added to the yogurt mix as an additive can be reduced. It is therefore possible to prevent an increase in the acidity of yogurt without damaging the original flavor of the yogurt.

[0015] Therefore, it is an object of the present ~~disclosureinvention~~ to provide a method for culturing lactic acid bacterium by which lactic acid bacterium can produce a bacteriocin with high efficiency and a method for producing fermented milk by which an increase in the acidity of fermented milk can be suppressed.

[0016] These and other objects, features, ~~embodimentaspects~~ and advantages of the present ~~disclosureinvention~~ will become more apparent from the following detailed description of the present ~~disclosureinvention~~ when taken in conjunction with the accompanying drawings.

#### Brief Description of Drawings