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The objective of this research was to study the variation of classes of fatty acids in gariss (fermented camel milk) prepared under controlled conditions (starter cultures and time of fermentation). Inoculations of raw camel milk with selected LAB strains (E. durans R03, E. faecium NWL and L. plantarum BJ6 and their combination as well as the control - fermentation without starter cultures) was performed at varying periods of time (zero, 3, 6, 9 and 12h) at ambient temperature, then the role of these conditions on fatty acids classes were studied. Camel milk fermented under starter-culture controlled conditions contained unsaturated fatty acids, including the essential fatty acids. Considerable amounts of omega3 and omega6 fatty acids and the absence or presence of low amounts of short chain fatty acids were found compared to cow milk.

**Abstract**

The study of microflora in traditional fermented dairy products as gariss (fermented camel milk) prepared under controlled conditions (starter cultures and time of fermentation). Inoculations of raw camel milk with selected LAB strains (E. durans R03, E. faecium NWL and L. plantarum BJ6 and their combination as well as the control - fermentation without starter cultures) was performed at varying periods of time (zero, 3, 6, 9 and 12h) at ambient temperature, then the role of these conditions on fatty acids classes were studied. Camel milk fermented under starter-culture controlled conditions contained unsaturated fatty acids, including the essential fatty acids. Considerable amounts of omega3 and omega6 fatty acids and the absence or presence of low amounts of short chain fatty acids were found compared to cow milk.

**Key words:** Starter cultures, Enterococcus, fatty acids classes, control conditions, selected LAB strains.
The objective of the present work was to know the changes in the fatty acids classes of gariss prepared under controlled conditions in order to assess the influence of the strains used.

Methodology
Fermented camel milk (gariss) was prepared under controlled conditions. Inoculations of camel milk with selected LAB strains (E. duransR03, E.faecium NWL and L. plantarum BJ6 and their combination as well as the control, fermentation without starter cultures,) was performed for varying periods of time (zero, 3h, 6h, 9h and 12h) at ambient temperature. The starter culture was made by one strain inoculated in nonsterilized camel milk last 24h (with the three strains and their combination). A 3% starter culture was used to prepare gariss, and then the fermentation was carried out according to the traditional gariss preparation methods. Five gariss batches were prepared, and for each 500 ml of camel milk 3% batch, of 24 hours starter cultures was inoculated. Batch one was inoculated with strain Enterococcus duransR03, batch two was inoculated with strain E.faecium NWL, batch three with Lactobacillus plantarum BJ6, batch four consisted of a mixture of the strains at equal proportions and batch five was a control batch which was left uninoculated. The preparation was left to ferment for 12 hours at ambient temperature. Samples were withdrawn in 0, 3, 6, 9 and 12hours to perform the fatty acids classes of the produced gariss, the fatty determined with method described by Konuspayeva et al., 2008.

Results and Discussion
The fatty acids classes of fermented camel milk were affected positively by starter cultures fermentation. The uses of some species such as E. duransR03, E.faecium NWL and L. plantarum BJ6 in production of laboratory scale fermented camel milk gariss, suggests their possible use as starter culture in the manufacture of commercially gariss products. However, more studies are needed to complete the isolation and characterization of new LAB strains that could be present in camel milk produced in Sudan and to compare the results with reports from other countries and regions. Also, the organoleptic analysis of the gariss produced under the above mentioned conditions are also recommended for further studies.

References
1. Akhmetasadıkova, S; Baubekova, A; Konuspayeva, G; Akhmetsadykov, N and Gerard Loiseau, G (2014). Microflora identification of fresh and fermented camel milk from Kazakhstan, Enir. J. Food Agric. 26 (4): 327-332.
2. Konuspayeva, G.; Lemarie, E.; Faye, B.; Loiseau, G. and Montet, D. (2008). Fatty acid and cholesterol composition of camel's (Camelus bactrianus, Camelus dromedarius and hybrids) milk in Kazakhstan, Dairy Science and Technology, 88: 327-340.

Abstract
In recent years there has been a search for effective ways of fermentation of different types of milk of farm animals, including camel and mare. The basis of our proposed method is to use a single or two-stage bioreactors containing immobilized cells of lactic acid bacteria (Lactobacillus) and lactose-fermenting yeasts (Kluyveromyces), entrapped in alginate beads or carrageenan gels, in which the substrate is provided with a certain flow rate and the fermentation product exits from the bioreactor column. In a single-stage bioreactor, the fermentation of raw material by lactic acid bacteria and yeasts entrapped in gel beads occurs simultaneously; in a two-stage bioreactor the processes of alcoholic and lactic acid fermentation occur in different columns that are connected to each other by conductive tubes. It means that the products of lactic fermentation passes into the second column packed with immobilized yeasts, where the final product is formed. Our proposed method of milk fermentation enables us to obtain products with desired properties, as fermentation depth of substrates and the quality of the products are regulated by varying parameters such as the column volume (height and width) and the flow rate. Thus, fermentation processes of milk of various origins in continuous bioreactors allow obtaining products with desired properties.

Key words: milk, lactic fermentation, bioreactor, immobilized cells, yield