International Journal of Bioscience and Biochemistry
www.biosciencejournal.net
Online ISSN: 2664-6544, Print ISSN: 2664-6536
Received: 22-09-2021, Accepted: 07-10-2021, Published:
23-10-2021 Volume 3, Issue 2, 2021, Page No. 8-9

Determination of different species of bacteria associated with fermented cow milk (Kindirmo) commonly consumed in Bauchi metropolis of Bauchi state, Nigeria

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DOI: https://doi.org/10.33545/26646536.2021.v3.i2a.24

Abstract
A research was carried out to determine different species of bacteria associated with cow milk (KINDIRMO) commonly consumed in some selected areas of Bauchi Metropolis, Bauchi State. The total of ten (10) different samples were obtained from different sales point inside sterile containers and thereafter transported to the laboratory for analysis. The media used for the analysis included; Nutrient and Macconkey agar. The total of six (6) different bacterial species were isolated and characterized appropriately using standard method, and these included; *Staphyloccus aureus, S. cereus, Escherichia coli, Lactobaccillus spp, Streptococcus spp* and *Shigella spp* respectively. *Staphylococcus spp* had the highest frequency of occurrence among the isolates. Therefore, it can be recommended that sellers of such products must maintain a constant hygiene in order to prevent further microbial contamination.

Keywords: cow milk (KINDIRMO), Bauchi metropolis

Introduction

Milk is obtained as a complete food because it contain protein in the form of casein and carbohydrate in the form of lactose, fat in the form of butter, vitamins and minerals (Hauge *et al.*, 2007) [4]. In Nigeria, locally processed cow milk products are prepared mainly by Fulanis, where the products is being processed into (Kindirmo, Nono) and butter thereby having four products (Chatter *et al.*, 2006) [6]. Raw milk were obtained from cows at home or settlement in the Fulani hamlets or villages where shelf life and safety of the products are not mainly considered.

The raw milk is however processed into its constituent products and sold to both urban and rural dwellers for human consumption. Cow milk (Kindirmo) are produced from locally pasteurized cow milk which is being prepared by heating to boiling point and then allow to cool at 37^0c (Baylis, 2009) [2]. Fresh milk may contain varying number of microorganisms depending on the measures taken during milking, cleaning and handling of utensils (Salman and Hamad, 2011) [5]. *Bacillus spp, Salmonella spp Escherichia coli* 0157:H7 and *Staphylococcus spp* have been implicated to be associated with the milk borne diseases and these are often isolated from fresh cow milk (Ali and Abdelgadir, 2011) [1].

Milk and dairy based ingredients are used as components for many food products. Their contributions consist of unique flavor desirable texture, excellent nutritive value. Fermentation is said to be essentially brought about various species of bacteria especially members of the genus *Lactobaccillus* and other lactic acid bacteria, mould and yeast. Variation in milk composition, bacteria flora and ambient temperature has been noticed to be responsible for product of varying quantities according to Laszlo (2007) [4].

Aim and Objectives

Aim: The research is aimed at determining different species of bacteria associated cow milk (Kindirmo) commonly sold in some selected areas of Bauchi Metropolis, Bauchi State.

Objectives:

1. The determination of different bacterial species associated with the products
2. The determination of environmental parameters (Temperature and pH) associated with the products.

Statement of Problem

In Northern Nigeria, Fermented cow milk (Kindirmo) were being produced by village farmers and mostly were not properly trained on hygiene and safety. About 90% of food contamination were due to poor hygiene and subsequently the used of unsterilized materials. Therefore, there is a stringent need to isolates and identify different species of bacteria associated with the products as it may lead to foodborne illness.

Material and Method

Study Area

The study areas included; Wuntin Dada, Muda-Lawal, Yelwa, Jahun, Tirwun and Gwallameji Communities of Bauchi Metropolis, Bauchi State.

Samples Collection

The total of eight (8) different samples of fermented cow milk (Kindirmo) were obtained from different sales point within the study areas. The samples were collected at random in sterile containers and thereafter transported to the laboratory for analysis.

Results and Discussion

Table 1: Distribution of Bacterial Isolates among Fermented Cow milk (Kindirmo)

Products	*Staphylococcus spp*	*Lactobacillus spp*	*E. coli*	*Streptococcus spp*	*Shigella spp*
A	+	+	-	+	-
B	-	+	+	-	+
C	+	-	+	-	-
D	-	+	+	+	+
Total	02	03	03	02	02

Key: A= Fermented cow milk sales point 1
B= Fermented cow milk sales point 2
C= Fermented cow milk sales point 3
D= Fermented cow milk sales point 4

Table 2: Environmental Parameters Detected among Fermented Cow milk (Kindirmo)

Fermented Products	Temperature (^{0}C)	pH
A	39	6.5
B	38	7.0
C	40	7.3
D	37	6.9

Key: A= Fermented cow milk sales point 1
B= Fermented cow milk sales point 2
C= Fermented cow milk sales point 3
D= Fermented cow milk sales point 4

Discussion

The total of six (6) different bacterial species were isolated from the fermented products and they were characterized using standard method. *Staphylococcus spp* is regarded as the predominant among the bacterial isolates. Environmental parameters were also determined appropriately.

Conclusion

We may conclude that various species of bacteria found to associate with fermented cow milk in the study areas, and these may results to foodborne illness.

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