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RESEARCH ARTICLE

MICROBIAL QUALITY AND SAFETY OF BREAD SOLD IN CAFETERIA, TEA AND BREAD SHOP OF JIMMA TOWN, OROMIA REGIONAL STATE, SOUTHWEST ETHIOPIA.

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Abstract

The study was conducted in Jimma town, Jimma zone, south west of Ethiopia with the aim to evaluate the microbiological quality and safety of bread sold in Jimma town. The study involved laboratory analysis for microbial quality and safety of bread. Standard methods were used for the enumeration of *Enterobacteriaceae*, *Staphylococcus aureus*, lactic acid bacteria, yeasts and moulds, antibiotic susceptibility patterns of the isolates. Data were analyzed using SPSS software version 16.00. A total of 90 bread samples (30 from each cafeteria, tea and bread shop) were collected. Result of the study indicated, the mean microbial counts ($CFUg^{-1}$) were dominated by aerobic mesophilic bacteria (5.2±0.5), aerobic bacterial spore (4.6 ±0.7), moulds (4.0±0.6), *S.aureus* (3.3±0.5), Yeast (3.0±0.6), lactic acid bacteria (2.5±0.4) and *Enterobacteriaceae* (1.1± 0.1), however, *Coli* form bacteria was not detected in any bread samples. Of the total of 546 isolates characterized, the most predominant were *Bacillus* spp. (40.7%) followed by *Staphylococcus* spp. (25.1%), *Micrococcus* spp. (10.6%), *Pseudomonas* spp.(9.9%), *Acinetobacter* spp. (7.7%) and *Aeromonas* spp. (6%). Totally, 68.9% of samples were positive for *S. aureus* but *Salmonella spp.* below detectable level in any bread sample of suppliers. *S. aureus* isolates were resistant to maximum seven antibiotics (4.8%) and highly resistant to Methicillin, Oxacillin and Penicillin G (100%)**.** Bread contamination problems in present study could be due to poor personal hygiene, and improperly sanitized utensils. Generally, the microbial quality of bread sold in Jimma town was poor, particularly tea shop and cafeteria bread sellers needs regular inspection.

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Introduction:-

Bread is eaten all over the world by almost peoples of every culture. If we traveled to the other side of the planet we would probably find a culture very different from our own, yet with its own version of bread (Eagle, 2002). Therefore; bread is a food product that is universally accepted as a very convenient form of food that has desirability to all population rich and poor, rural and urban. Thus, none of any food types compute with bread in line with consumption in the world.

Although bread is a prominent food for the world population, it affected the health of the people in case of contaminated with pathogenic microorganisms. Basically, the surface of a fresh baked bread free of viable microorganisms; however, it is subject to contamination by mould spores and bacteria from the air, improperly sanitized utensils, and handlers, transporting equipments and wrapping materials. Ehavald and Estonia (2009) explained that more than 90% of bread contamination occurs during cooling, transporting, slicing and wrapping operation. Moreover, it has been reported that mould spores in proofers' cloths in bakeries can build up enough heat resistance to survive baking (Ogundana and Odia, 1986).

Ogundare and Adetuyi **(**2003) reported from Nigeria, freshly baked bread, after ten minutes had been contained bacterial species; include *Bacillus cereus* and *Staphylococcus sp.* and after 48 and 96 h, *Staphylococcus cohnii* and *Bacillus firmus* were isolated, respectively. Similarly, after 10 min mould such as *Aspergillus flavus*, *Aspergillus niger* and *Penicillium citrinum* were reported. Daniyan and Nwokwu (2011) reported total aerobic bacterial count ranged from 2.85 x 10^4 CFU/g to 6.21 x 10^6 CFU/g, Coli form from 1.19 x 10^4 CFU/g to 2.05 x 10^6 CFU/g, *Staphylococcus* from 2.00 x 104 CFU/g to 5.52 x 105 CFU/g and fungi count ranged from 4.0x 10^3 to 1.40 x 10^6 CFU/g and the highest frequency occurrence of *Staphylococcus*, *Escherichia coli* and *Bacillus* spp. respectively were recorded from the beaked bread which are currently emerging to resist various types of antibiotics.

Even though, the bread is highly consumed as daily meal in home, cafeteria, and tea shops in Ethiopia (Kuma, 2009), the microbial safety of this delicious food is still not documented. On the other hand, the bread is eaten by nearly all of the world population but some groups of the consumers are criticized about the microbial safety of the bread because of unhygienic of transporting material, handlers and storage place of bread (Libby, 2012) which is presently appeared in Jimma town. Hence, having this scenario insight, the present study was designed to assess the microbial load of shop and cafeterias sold bread, and evaluate their antibiotic susceptibility.

Materials and Methods:-

Description of the study area:-

The study was conducted in Jimma town, Jimma Zone, Oromia regional state, south west Ethiopia, located at 353 km away from Addis Ababa, capital of the country. The microbial analysis was carried out at Jimma University, Biology department, research and Post graduate Laboratory. The geographical location of the town is 7°41'N latitude, 36°50'E longitude, and an average altitude of 1, 780 m above sea level. The mean annual minimum and maximum temperature of the town is 14 and 30 °C, respectively with the mean annual rainfall ranges from 1138-1690 mm (Alemu *et al.*, 2011).

Sample collection:-

A total of 90 samples were collected from baked bread selling shops of Jimma town for past two years. The food samples were purchased from bread sellers at time between 8:00- 12AM. The purchased food samples were added into sterile polyethene bag by bread sellers and transported to Research and Postgraduate Lab of Jimma University, College of Natural Sciences, Department of Biology. The microbial analysis was conducted within one to three hours of collection. The food samples were kept in the refrigerator at 4°C until microbial analysis was conducted.

Sample preparation and microbial enumeration:-

Sample preparation:-

A 25 g of bread samples was suspended in 225 ml of buffered peptone water (BPW), and homogenized in Erlenmeyer flasks for 5min using shaker at 160 rpm. A 1 ml of homogenized sample was transferred into 9 ml of BPW, and mixed thoroughly by using vortex mixer. The homogenized food sample was serially diluted from 10^{-1} to 10^{-6} and 0.1 ml aliquot of appropriate dilution was plated on pre-solidified plates and incubated at appropriate

temperature and period. The colonies was counted from plate containing microbial colonies between 30 and 300 and expressed in colony forming units per gram (CFU/ g).

Microbial Enumeration:-
From appropriate serial dilutions, 0.1 ml of the aliquot was plated on Plate Count Agar (PCA), Violet Red Bile Agar (VRBA) plates (Weil *et al*., 2006), MacConkey agar(Spencer *et al*., 2007) ,Mannitol Salt Agar (MSA)(Acco *et al*., 2003) and incubated at 32°C for 48 hrs for count *Aerobic mesophilic bacteria*, Coliform, *Enteriobacteriaceae* and *Staphylococci*, respectively, and also for count of *Aerobic bacterial spore* formers, appropriate serially diluted sample was heat treated in a water bath adjusted at 80 ^{o}C for at least 10 min. Thereafter, 0.1 ml aliquot was plated on pre-solidified surface of PCA and incubated at 35 ^{o}C for 48 hrs (Acco *et al*., 2003). Moreover, 0.1 ml aliquot was plated on pre-solidified surfaces of Potato Dextrose Agar supplemented with 0.1g chloramphenicol and incubated at 25 ^{o}C for 5-7 days (Spencer *et al*., 2007). Smooth (non-hairy) colonies without extension at periphery were counted as yeasts whereas hairy colonies with extension at periphery were counted as mould.

Microbial Analysis:-
From appropriate aerobic mesophilic countable plate, 10 to 15 colonies with distinct morphological differences were randomly picked from plates and aseptically transferred in to a test tube containing 5 ml of nutrient broth. Then, incubated at 32 ^{o}C for 24 hrs. The repeatedly sub- culturing isolates were characterized up to genus level based on John (2012) bacterial classification manual.

The cell morphology of the bacterial pure isolates was examined microscopically after gram staining, and also the motility of isolates were checked using motility medium. Moreover, after repeatedly purified the agar block of mold culture on PDA, the morphology of hyphal culture was stained using lacto phenol cotton blue and observed under the microscope for identification of fungal genera. The biochemical test including KOH (potassium hydroxide), Catalase, Oxidation fermentation (O/ F), Cytochrome oxidase tests were conducted, accordingly.

Catalase test:-
After plate contains young colony had flooded with 1ml of 3% H_2O_2 and the formation of gas bubbles was observed. The occurrence of gas bubbles was taken as positive for catalase test (MacFaddin, 1980).

Oxidation fermentation (O/ F) test:-
Ingredients (g/l): Peptone, 2 g; yeast extract, 1 g; NaCl, 5 g; K_2HPO_4, 0.2 g; glucose,10 g; bromothymol blue, 0.08 g; agar, 2.5 g; distilled water, 1000 ml; pH, 7.10 were prepared. Accordingly, test tubes containing 15 ml of freshly prepared medium for O/F test were autoclaved and immediately cooled under tap water to avoid dissolution of oxygen in the medium. Then, the broth cultures were inoculated into the medium by stabbing with a sterile straight wire to the bottom. An organism with oxidative metabolism displayed yellow in the upper half of the tube and green in the lower half. An organism with fermentative metabolism displayed yellow in both halves of the tube. Acid formation and growth regions were interpreted after 2 to 5 days of incubation at 32 ^{o}C.

Cytochrome oxidase test:-
Accordingly, freshly prepared reagent A and B were mixed in the ratio of 2:3 immediately before use. Reagents: A, 1% α-naphthalene dissolved in absolute ethanol, B, 1%N, N-dimethyl-p-phenylenediammonium chloride in distilled water. Three drops of the oxidase reagent were added on to the surface of the growth of isolated colonies of test bacterium. The presence or absence of appearance of a blue color on the colonies was observed within 30 s (Kovacs, 1956).

Isolation of *Salmonella* spp:-
A 25g of food samples was mixed with 225 ml of BPW and incubate at 37 °C for 24 hrs, then 1 ml pre-enrichment broth culture was added to 10 ml of selenite cysteine broth and incubate at 37 ^{o}C for 24 hrs. Next to that , a loopful of suspension from secondary enrichment broth was streaked onto Xylose Lysine Deoxycholate Agar (XLD). The presumptive *Salmonella* colonies was picked off and transfer to 5 ml nutrient broth and incubate at 37 ^{o}C for 24 hrs, then streak onto Nutrient Agar for purity and incubate at 37 °C for 24 hrs. For conformation the isolates were *Salmonella* spp., the biochemical testes was done according to the procedure of (Johnson and Case, 2007).

Isolation of Staphylococcus aureus:-
The golden yellow colony shown on MSA and gram-positive cocci with clustered arrangement under the microscope were subjected to preliminary biochemical tests coagulase tests. The pure colony of isolates were emulsified with distilled water on the duplicate clean slide (i.e. control and test slide), then, a loopful of human blood plasma was added on the emulsified suspension and mixed. The formation of clumping with in 10 s was suggested isolates as Coagulase positive (Cheesbrough, 2006).

Antimicrobial susceptibility testing for some pathogens:-
The antimicrobial susceptibility testing for pathogens isolated from bread samples was tested using the disk diffusion method and the microbial cell concentration was adjusted to the standardize turbidity of 0.5 McFarland which is equivalent to 10^7- 10^8 CFU/g (Bauer *et al*., 1996). The sterilized cotton swab moistened with bacterial cell suspension had been swabbed on to the Muller-Hinton Agar and allows to drying. Thereafter, the antibiotic discs were dispensed on the medium and incubate at 37°C for 18 hrs and the zones of inhibition were measured using vernal caliper. The results of the antimicrobial susceptibility were interpreted based on the guidance of National Committee for Clinical Laboratory Standards (NCCLS, 2007). Finally, the isolates were classified as sensitive, intermediate, or resistant. Intermediates were considered as resistant for purpose of analysis. The following standard drug discs (Oxoid) and their potency (μgml^{-1}) were used. As a result chloramphenicol (30), Norflaxacin (10), Amoxicillin (10), Erythromycin (15), Oxacillin (5), Vancomycin (30), penicillin G (10) and Methicillin (5) were used for *Staphylococcus aureus.* The reference strains were Staphylococcus *aureus* (ATCC25923).

Data analysis:-
The Percentage of Coefficient of variation (% CV) was calculated to see if there is significant variation in counts within the bread samples analyzed. Mean values of bread samples from different source were compared using one way ANOVA and the significance of differences were considered at 95% confidence interval ($P < 0.05$).

Results:-

The result of this study indicated that highest mean count of Enterobacteriaceae (2.0 log $CFUg^{-1}$) and S. *aureus* (3.7 log $CFUg^{-1}$) were recorded from cafeteria and tea shop, respectively, while considerable number of lactic acid bacteria (LAB 2.8 log $CFUg^{-1}$) was observed in bread shop. On the other hand, the mean counts of Coliform were below detectable level in all bread samples suppliers (**Table 1**). There was statistically significant difference ($p < 0.05$) among the mean counts of Aerobic mesophilic bacteria (AMB), Enterobacteriaceae, coliform, Aerobic bacterial spore count (ABS), Staphylococci, LAB, Yeasts and Moulds in all bread samples sources.

Table 1:- Mean of microbial counts (log $CFUg^{-1}$) from bread sold in Jimma town

Sample source	Microbial mean counts (log $CFUg^{-1}$ ± SD)														
	No	AMB	%CV	Entero	%CV	ABS	%CV	*S.aureus*	%CV	LAB	%CV	Yeast	%CV	Mould	%CV
Tea shop	30	5.9±0.4	8	1.3±0.2	15	4.5±0.8	17	3.7±0.8	20	2.7±0.7	25	3.4±0.6	17	4.6±0.7	15
Bread shop	30	4.7 ± 0.4	8.5	0.0±0.0	0	4.8±0.7	14	2.7±0.4	14	2.8±0.3	11	2.7±0.6	22	3.8±0.7	18
Cafeteria	30	4.9 ± 0.7	14	2.0±0.1	5	4.6±0.7	15	3.6±0.3	8	2.1±0.2	9	2.8±0.5	17	3.5±0.5	14
Total	90	5.2±0.5		1.1±0.1		4.6±0.7		3.3±0.5		2.5±0.4		3.0±0.6		4.0±0.6	

Where; AMB = Aerobic Mesophilic Bacteria, Entero = Enterobacteriaceae, ABS = Aerobic Bacterial Spore, *S.aureus =Staphylococcus aureus*, LAB =Lactic Acid Bacteria, CV= Coefficient of Variance, SD= Standard Deviation, CFU= Colony forming unit.

Microbial analysis of bread samples:-
From the total of 90 bread samples analyzed, 546 bacterial isolates were obtained. The isolates were grouped into six genera based on John's (2012) bacterial classification system. Among the identified genera, the predominant

bacterial group was *Bacillus* spp. (40.7 %) followed by *Staphylococcus* spp. (25.1 %), *Micrococcus* spp. (10.6 %) and *Pseudomonas* spp (9.9 %) (**Table 2).**

Table 2:- Frequency distribution of dominant bacteria in bread collecting from selling area, Jimma town, southwestern Ethiopia

Bread source	No of isolates	*Bacillus* spp.	*Staphylococcus* spp.	*Micrococcus* spp.	*Pseudomonas* spp.	*Acinetobacter* spp.	*Aeromonas* spp.
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Tea shop	209	86(41.1)	59 (28.2)	21(10)	18(8.6)	14(6.7)	11(5.3)
Cafeteria	182	70 (38.4)	48(27.9)	17(9.3)	25(13.7)	12 (6.6)	10(5.5)
Bread shop	155	66 (42.6)	30(19.3)	20 (12.9)	11(7.1)	16 (10.3)	12(7.7)
Total	546	222 (40.7)	137(25.1)	58 (10.6)	54 (9.9)	42(7.7)	33(6)

Prevalence of *S. aureus* and *Salmonella* spp:-

In the present study, the overall 68.9% bread samples were positive for *S. aureus*. However, the frequency distribution varied among the bread suppliers. Accordingly, it was as prevalent as 93.3% of *S. aureus* in tea shop and 70 % in cafeteria bread whereas the lowest prevalence was observed in bread shop (43.3%) (Figure 2); on the other hand, no *Salmonella* spp**.** were detected in any bread samples collected from aforementioned suppliers.

Figure 2:- Prevalence of *S. aureus* from bread sample source, Jimma town

Methicillin-resistant patterns of Staphylococcus aureus (**MRSA**):- Isolates

The MRSA patterns of *S. aureus* revealed that, 40.3 % of the isolates were resistant to 4 antibiotics followed by 14.5 % to 4 and 5 antibiotics and fewer isolates (4.8%) resistant to 7 antibiotics (**Table 3**).

Table 3:- MRSA patterns of *S. aureus* isolated from bread in Jimma town

S. aureus			
No. of patterns	Antimicrobial resistance patterns	No. of isolates (%)	Total (%)
Two	MET/ OX	6(9.7)	6(9.7)
Three	MET/ OX /VAN	3(4.8)	6(9.6)
	MET/ OX /AM	3(4.8)	

Four	MET /E/ OX /AM	3(4.8)	25(40.3)
	MET /P/ OX /AM	22(35.5)	
Five	MET/E /P/ OX /AM	3(4.8)	9(14.5)
	MET/OX/P/AM/VAN	6(9.7)	
Six	MET//E/C/OX/P/AM/	6(9.7)	9(14.5)
	MET//E/OX/P/AM/VAN	3(4.8)	
Seven	MET//E/C/OX/P/AM/VAN	3(4.8)	3(4.8)

Where: MET; Methicillin, OX; Oxacillin, VAN; Vancomycin, AM; Amoxicillin, P; Penicillin, E; Erythromycin, C; Chloramphenicol.

Discussion:-

In the present study, the mean total counts of AMB (5.2 $CFUg^{-1}$) was observed which is in agreement with Daniyan and Nwokwu (2011) who reported between 4.5 to 6.8 log $CFUg^{-1}$ from beaked bread. Unsanitary handlings of bread sellers might cause for cross contamination (Dawson and Canet, 1991). Some bread seller is carriers for pathogenic microbes and transfer food borne pathogens to the consumers during bare handling of bread. *Salmonella, Campylobacter* and *E. coli* can survive on fingertips for long periods of time. In generally, the mean count of AMB in all bread suppliers shop were 4.7 and above which is belonged to unsatisfactory level (Gilbert *et al*., 2000). The over loaded of AMB in bread samples could be due to poor hygienic of bakery, bread sellers and transporting materials (Seiler, 1988). Ehavald and Estonia (2009) also reported more than 90% of bread contamination occurs during cooling, transporting, slicing and wrapping processes. AMB loaded food regarded as harmful even if the organisms are not known to be pathogens (Sudershan *et al*., 2009).

The mean count of Enterobacteriaceae in the present study was 1.1 logs $CFUg^{-1}$ which is very low compare to the earlier report of (Mustafa and Abdulla, 2011) who reported the counts between 2.3 to 4.4 log $CFUg^{-1}$ in traditional foods. Moreover, none of Enterobacteriaceae detected from bread shop. Hence, according to the guideline the Enterobacteriaceae count fit to the acceptable level. The turn down of Enterobacteriaceae count implies that due to low water activities of bread.

In the present study, in any bread suppliers samples the coliform bacteria were below the detectable level in contrast to the report of (Daniyan and Nwokwu, 2011) who reported counts between 4.1 to 6.3 $CFUg^{-1}$ from beaked bread. The absence of Coliform in the present study could be due to the bread samples less exposed to fecal contamination. The aerobic bacterial spore (ABS) count (4.6 log $CFUg^{-1}$) of the present study is higher compared to report by Mosupye and Holy (1999) where the counts ranged between 1.2 to 2.0 log $CFUg^{-1}$ in ready to eat food samples from Johannesburg, South Africa, however, comparable to the finding of (Ismail, 2006) who reported between 2.3 to 4.7 log $CFUg^{-1}$from ready to eat food. According to the guideline, in all bread suppliers the mean count of ABS were ranged in unsatisfactory level (>4 log $CFUg^{-1}$). The higher counts in the present study implies that due to the contamination of bread by the heat resistant spore forming bacteria that survive baking and germinate in the bread after baking , from air during transportation, improperly sanitized utensils, and handlers, transporting equipments and wrapping materials (Seiler, 1988).

The mean counts of *S. aureus* in the present study were 3.3 log $CFUg^{-1}$, which is lower than the finding of (Daniyan and Nwokwu, 2011) who reported between 4.3 to 5.7 log $CFUg^{-1}$from beaked bread. The higher *S. aureus* in the present study could be due to unhygienic handling of the bread sellers, particularly tea shop and cafeteria workers frequently used bare hand that is why the amount of *S. aureus* was increased in these bread suppliers. Moreover, they did not use special cloth while processing and selling. According to Mensah (2002), using of food handling materials is reducing the level of contamination.

In the present study, the mean count of LAB was 2.5 log $CFUg^{-1}$. This result is lower than the earlier work of Omemu and Omeike (2010) that ranging from 4.5 to 9.2 log $CFUg^{-1}$ in fermented food so called Ogi. Original the dough of bread contain higher amount of LAB, however, the reduction of LAB in present study could be due to heat treatment of bread during baking and presence of less amount of water activities. Basically the presence of LAB in the food is significance for secure of health to consumers because of it produce antimicrobial compounds that act against pathogenic microorganisms (Shirazinejad *et al.*, 2010).

The mean counts (log $CFUg^{-1}$) of moulds and yeasts in the present study are 4.0 and 3.0, respectively. This result is in agreement with finding of (Daniyan and Nwokwu, 2011) who reported mean count of molds and yeast between 3.6 to 6.1 log $CFUg^{-1}$ from bread samples. Normally, the predominant microbial group contaminating the bread during processing and handles are mold and yeast (Coda *et al*., 2011). Yeast spoilage of bread is rare like mould does not survive the baking process (USDA, 2012). Molds are major concern of bread spoilage and deterioration the quality of bread because of its spore resist harsh environment in nature and easily access to bread from air, bakery and survive baking temperature that is why the number of mold inflated in the present study (Frazier, 1967). According to the report of (Daniyan and Nwokwu, 2011) mould including *Absidia corymbifera, Penicillium frequentans westing, Aspergillus flavus, Aspergillus niger* and *Penicillium citrinum* were isolated after ten minutes from beaked bread. Besides the visible growth, mold may be responsible for off-flavors and synthesize mycotoxins and allergenic compounds that affect health of consumers (Tančinová1 *et al*., 2012). Although it is difficult to prevent moulds from growing on bread, the effort should be made to eliminate such conditions include the hygienity of bakers and sellers should be inspected and certain other protective measures such as general cleanliness in the bakery, proper baking, cooling, wrapping of bread reduces the chances of mold and bacterial growth in baked bread.

The predominant micro floral of bread samples collected from bread suppliers in the present study was generally *Bacillus* spp. (40.7 %) followed by *Staphylococcus* spp. (25.1 %), and *Micrococcus* spp. (10.6 %) in contrast to the report of (Daniyan and Nwokwu, 2011) in which the highest frequency of *Staphylococcus*, *Escherichia coli* and *Bacillus spp*. respectively were recorded from the beaked bread. But in accordance with result of (Viwoen and Holy, 1997), in which of 316 bacterial isolates, 50% were *Bacillus* and 31.6% *Micrococcus*. The predominance of *Bacillus* spp. among isolates could be due to its spore contaminate the bread during transportation from air, transporting materials, handlers and from floor of grains and dough, hence, they are equipped with heat-resistant spores ((Hoffman *et al.* 1973). According to Bryan *et al.* (1992), food items that are sold at the stalls have spore-forming bacteria, which are the main concern due to temperature time abuse. Hence, not all spores are eradicated during cooking; rather it could be activated by heat, which initiates them to germinate whenever environmental conditions become suitable for microbial growth. In present study, Coli from and *Salmonella* were not detected at all in all bread samples similar to the work of (Mosupye and Von Holy, 1999). This implies that the nature of the bread and heat treatments deny the *proliferate* of these fastidious microorganisms.

In present study, the antibiotic resistance patterns of the isolates revealed that all of *S. aureus* isolates resistant to three Methicillin group antibiotics including Methicillin, Oxacillin and Penicillin G, and also most of isolates resistance to Amoxicillin (85.5 %) and Erythromycin (40.3 %). This was in agreement with (Alexandra *et al.*, 2011) who reported that, 100 % of the isolates were resistant to most Methicillin group antibiotics whereas highly resistance than (Temilade, 2009) isolates in which out of 106 isolates of *S. aureus*, 40.6% were resistant to erythromycin, 63.2% to penicillin G, and 20.7% resistant to Oxacillin. This could be, presently isolates *S.aureus* carry mecA gene that encodes a variant Penicillin binding protein (PBP2a or due to the production of penicillinase enzyme that hydrolyzed the beta-lactam ring of penicillin derivatives antibiotics (Lowy, 2003).The alarmingly emerging of MRSA could be due to integration of genetic mobile elements such as plasmids, transposons, and insertion sequence in case of inappropriate or uncontrolled use of antibiotics (Deleo and Chamber, 2009; Szweda *et al*., 2012). Therefore, it is necessary to pay more attention to food hygiene practices to reduce or eliminate the risk from resistance to antibiotics and pathogenic bacteria originating from food (Van *et al*., 2007)

Conclusion:-

In concluded, the most predominant microbial genera were *Bacillus* spp., *Staphylococci* spp. and *Micrococcus* spp. hence, the presence of these microorganisms could be forecast for the presence of potential pathogens. Although *Salmonella spp*. and coliform were not detected in present study, the presence of high number *S. aureus* cause food intoxication` that lead to food born diseases. All of *S. aureus* isolates were resistant to three Methicillin group antibiotics including Methicillin, Oxacillin and Penicillin G. Thus, the *S. aureus* isolates considered as MRSA. The overall microbial quality of bread samples collected from suppliers was poor as compared to the guidelines set by other regulatory bodies. This could be due to poor personal hygienic, transporting materials and exposing to air microorganisms. Thus, the concerned bodies like the municipal and health official of Jimma town should give attention to improve the safety of baked bread by providing training to bakers and bread sellers to keep their personal hygiene, clean the transporting materials and how to manage the hygienty of bread accordingly

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