

Monitoring of contamination of microorganisms in local food outlets in the city of Sucre

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The research includes microbiological 200 food samples produced in 8 different places in the city of Sucre analysis. The analyzes consist in determining 7 microorganisms commonly found in foods with poor handling and hygiene and lack of training in good manufacturing practices and food handling. The results are: Salmonella contamination has negative in all samples, it is a good result considering that this organism is one of the most pathogenic potential.

Clostridium perfringens contamination with an incidence of 10% and of Bacillus cereus contamination with 6%. Aureos Staphylococcus 54.5%, 42.5% Aeróbiuos mesophilic, 34% total coliforms and Escherichia coli 11.5%, an indicator of lack of cleanliness and hygiene in food handling, having been found in the percentages of samples, higher loads to 10 CFU / g. Required by Rule Boliviana.

Contamination, Microorganisms, Food

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Introduction

One of the problems at national level and therefore at regional level, food safety, more pronounced in local sales of processed foods. One of the most important microbial contaminations is having an impact on children and elderly or sick people, mostly by poor hygiene and training in good manufacturing practices and food handling.

The presence of microorganisms in food does not necessarily mean a danger for the consumer or a lower quality of these products. Most of the foods become potentially dangerous for the consumer only after they have been violated the principles of hygiene, cleaning and disinfection. If the food has been subjected to conditions that might have led to the arrival in the same and / or multiplication of infectious or toxigenic agents become a vehicle for disease transmission.

Microbial parameters analyzed: The study conducted by analyzing the seven most frequent contamination of microorganisms: mesophilic Aerobius, staphylococcus aureus, salmonella, clostridium perfringens, basillus cereus, coliforms, Escherichia coli.

These seven microorganisms have the following implications for human health: Total mesophilic aerobic: high counts indicate contaminated raw materials, unsatisfactory health treatment under inappropriate storage conditions in time / temperature.

All pathogenic bacteria in foods are mesophilic and high counts are considered as indicators of pollution.

Aureos Staphylococcus: is indicative of contamination from the skin, mouth and nostrils food handlers, although materials and dirty equipment and raw materials of animal origin may also be a source of contamination. Cleaning, disinfection and proper temperature control.

Intoxication by this microorganism causes gastrointestinal clinical picture incubation for 1 to 8 hours. Symptoms are nausea, headache, abdominal pain, vomiting and frequent violent diarrhea without fever, and 24 to 48 hours total recovery occurs in most individuals except in children and frail elderly. Mortality is exceptional.

It is a short, painful and dramatic illness that can become dramatic when it affects the community. No specific treatment is only symptomatic to ease discomfort and restore dehydration.

Salmonella: Salmonella Typhi and Paratyphi cause typhoid and paratyphoid with clinical symptoms of septicemia exclusively in primates is spread by ingestion of contaminated food and water or by direct contact. The other cause of gastrointestinal salmonella infections is sometimes complicated by septicemic or located outside the gastrointestinal tract, characterized by high fever, diarrhea and intestinal pain and vomiting extension.

The disease is complicated especially in children and the elderly.

Clostridium perfringens: The organism in the human intestine produces a cause of the disease characterized by diarrhea and abdominal pain enterotoxin.

The incubation period is 6 to 8 hours enterotoxin releasing medium, at which time symptoms appear and in which microorganism sporulated and the toxin acts.

The majority of cases there is vomiting or fever with mild symptoms except low strength as children and elderly people who may appear in severe cases of dehydration.

Foods most commonly affected are meat products, including undercooked, prepared in large quantities and / or exposed to room temperature for long periods of time.

Bacillus cereus: The symptom is a mild intoxication that can occur in two different tables depending on the two existing types of toxin:

The diarrheal syndrome brings strong watery diarrhea, abdominal pain, and occurs between 6 to 15 hours after ingestion of contaminated food. No fever, nausea and sometimes vomiting and very rare cases of fever in weak individuals, like *clostridium perfringens* poisoning symptoms.

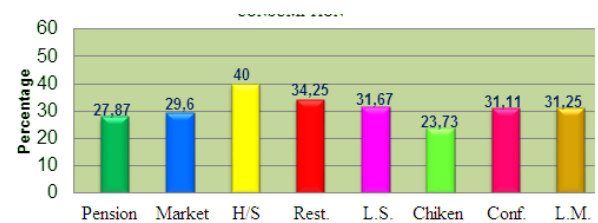
The emetic syndrome occurs between 1 and 6 hours cause acute gastritis or gastroenteritis in which acute nausea and vomiting are predominant, like *staphylococcal* intoxication symptoms.

Total coliforms and *Escherichia coli*: being a natural germ in the enteric tract of man and animals, pollution is fecal origin and is the indicator of the presence of pathogens but not necessarily enteriticos. Generally present in food in general lack of cleanliness in handling and storage, inadequate treatment, contaminated materials, equipment dirty, unhygienic handling.

Local Sampling: Control 8 types of premises, with a total of 200 samples were made, according to Table 1.

	Type of premises	N° of Samples	%
1	Pensions	51	25,5
2	Market	37	18,5
3	Hamburgers and Snack	30	15
4	Restaurants	25	12,5
5	Local Street	19	9,5
6	Chiken Locals	14	7
7	Confectionery	14	7
8	Local Morning	10	5
	TOTAL	200	100

Table 1 Type of premises and number of samples

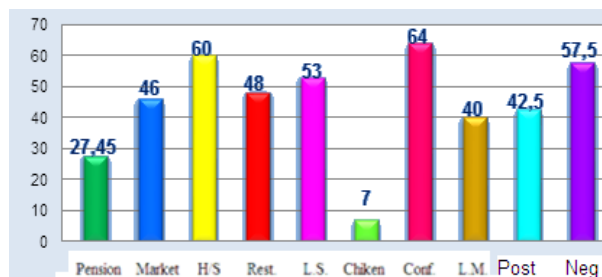


Graphic 1 Percentage rate distribution for local food consumption

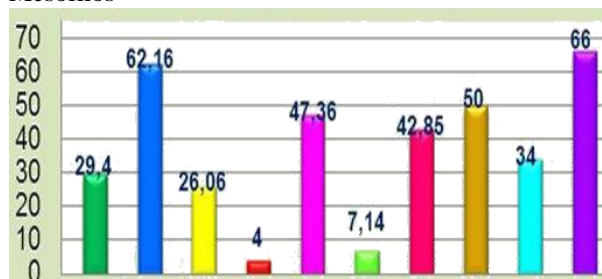
Analysis: 200 samples have been subjected to count for the first four microorganisms: mesophilic Aerobius, coliforms, *Escherichia coli*, *staphylococcus aureus* and only 131 samples for *clostridium perfringens*, *salmonella* and 60 for 18 samples *basillus cereus*.

Green is pensions, blue is markets, yellow is snacks, red is restaurants, violet is locals, light green is chicken's locals, pink is candy bars, mustard is morning locas, turquoise is positive samples and finally purple is negative samples.

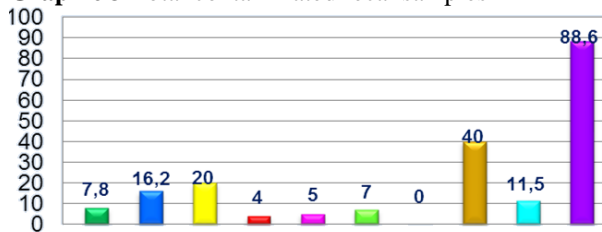
Method of testing



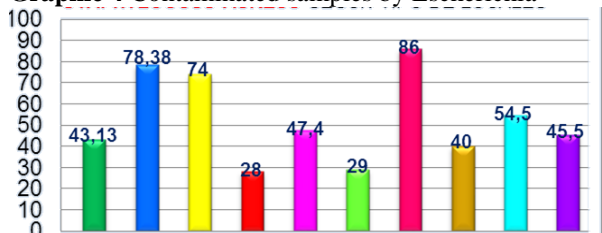
Graphic 2 Contaminated Samples by Aerobios Mesofilos



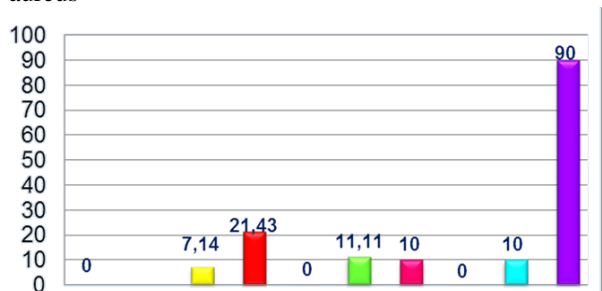
Graphic 3 Total contaminated fecal samples



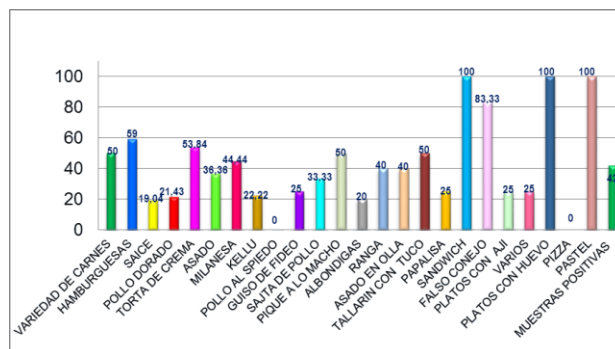
Graphic 4 Contaminated samples by Escherichia



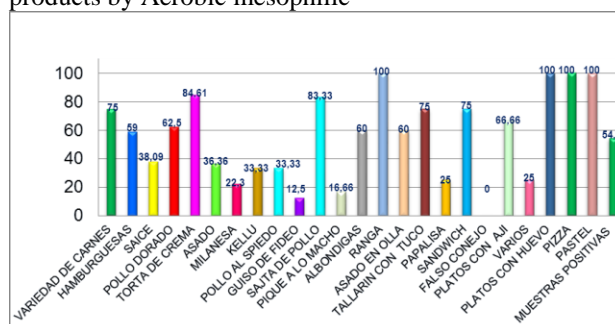
Graphic 5 Contaminated samples by Staphylococcus aureus



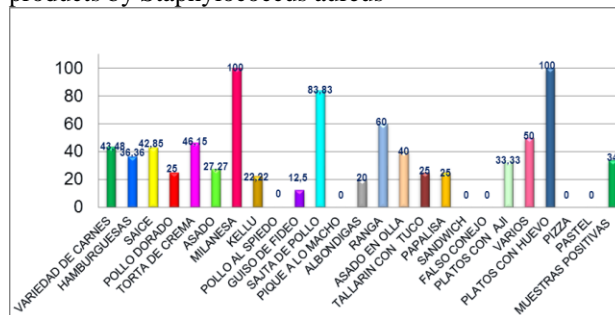
Graphic 6 Contaminated Sample by Clostridium Perfringens



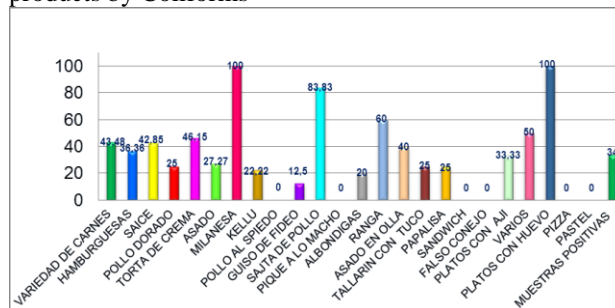
Graphic 7 Contaminated food, dishes and pastry products by Aerobic mesophilic



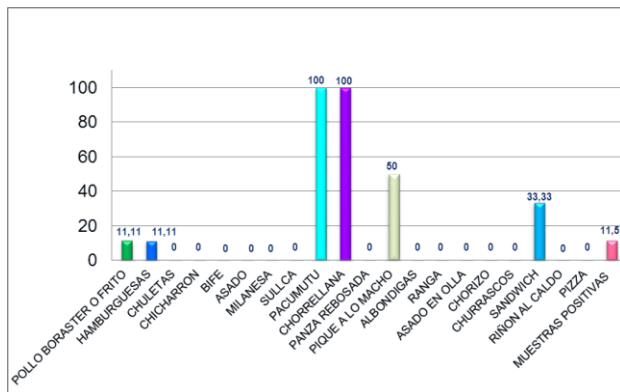
Graphic 8 Contaminated food, dishes and pastry products by Staphylococcus aureus



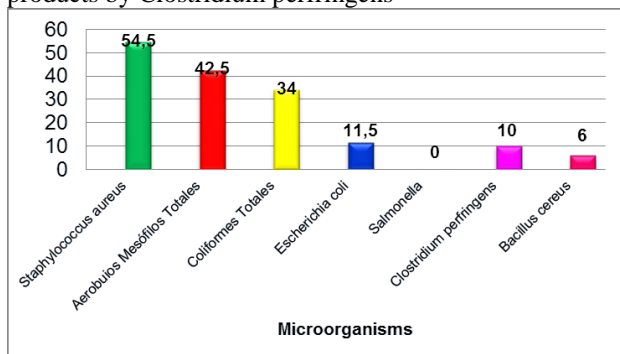
Graphic 9 Contaminated food, dishes and pastry products by Coliforms



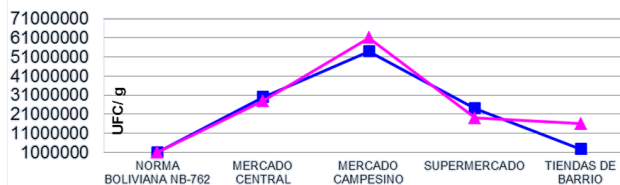
Graphic 10 Contaminated food, dishes and pastry products by Escherichia Coli



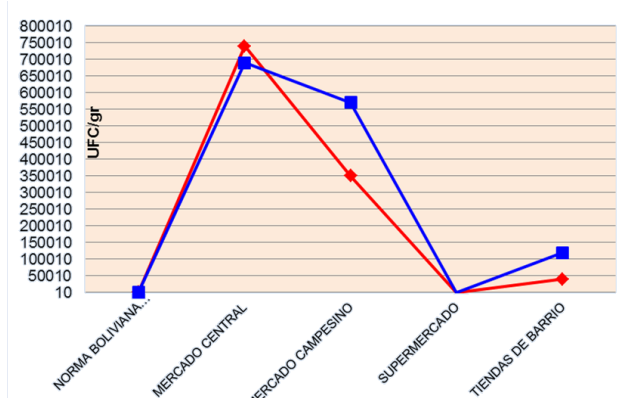
Graphic 11 Contaminated food, dishes and pastry products by *Clostridium perfringens*



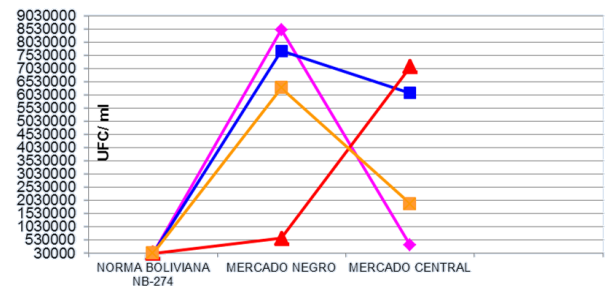
Graphic 12 Impact of micro samples detected by number of review in the city of Sucre



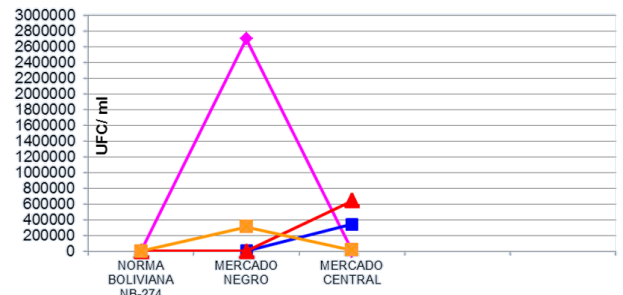
Graphic 13 Aerobic Mesophilic total counts on Markets in Sucre



Graphic 14 Escherichia coli total counts on Markets in Sucre



Graphic 15 Aerobic mesophilic in milk with fruit smoothies in the city of Sucre



Graphic 16 Escherichia Colin in milk with fruit smoothies in the city of Sucre

Conclusions

Salmonella contamination has negative in all samples; it is a good result considering that this organism is one of the most pathogenic potential.

Clostridium perfringens contamination with a 10% incidence of contamination with Bacillus cereus and 6%, indicative of the potential that someone may become ill with these microorganisms, infections that do not allow to attend school or work for about two days. However, this can be complicated for children under 5 and hence can IMR.

Aerobius Total mesophilic, Aureos Staphylococcus, Escherichia coli and total coliforms are indicators: lack of cleanliness in handling and storage, inadequate treatment, contaminated materials, equipment dirty, unhygienic handling, unsatisfactory health treatment products under inadequate storage time / temperature.

For which the incidence is 54.5% of Staphylococcus Aureos, 42.5% of mesophilic Aeróbiuos, 34% and 11.5% Total Coliform samples are contaminated with Escherichia coli, an indicator of lack of cleanliness and hygiene in food handling, with highest percentage in Central and black market. But all in all locations have a greater and lesser extent this indicator, so according to this percentage each local needs to improve its procedures and basic cleanliness and hygiene, local further exposed to the elements, with the use of covered containers , gloves, masks, frequent scheduled cleaning of all material, equipment and infrastructure of the premises, including refrigerators, etc.

Recommendations

Conduct periodic and continuous monitoring to determine the sources of pollution and especially for routine control.

Control the sale and handling of this product under quality control standards.
Form an interagency agreement to support and training vendors.