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LATE-GAS PROBLEM IN PROCESSED CHEES

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SUMMARY

Forty random samples of returned blowed processed chesse of age ranged from 3-4 months as well as forty samples of milk powder used for its manufacture were examined bacteriologically for incidence of clostridia. Cheese sampels showed 100% incidence of clostridia with counts ranged from 1×10^2 - 1.7×10^5 and a mean value of 2.9×10^4 while 75% of examined skim milk powder had counts ranged from 2×10^2 - 2×10^5 with an average of 8.5×10^4.

Clostridium oceanicum was detected only in milk powder examined samples while Cl. perfringens, Cl. sporogenes, Cl. biefermentus, Cl. cadaveris and Cl. butyricum were isolated at varying percentages from both procesed cheese and milk powder examined samples.

The economic and public health importance of isoalted clostridia as well as suggested measures for improving the quality of the poduct have been discussed.

INTRODUCTION

Cheese is one of the oldest product made from milk, so, its high nutritive value render its inclusion in the human diet extermly valuable. Processed cheese,, considered a variety of cheese which made from returned hard cheese using emulsifying contamination during its chain of manufacturing with anaerobic sporeforming clostridia which are responsible for some defects including proteolysis (Banwart, 1980); offensive odour and gassiness that render it to human consumption (Toyoda et al., 1990 and Neviani, 1992).

This investigation was done to throughlight on the causes of late gasblowing in processsed cheese.

MATERIAL AND METHODS

Forty sampels of aged processed cheese showing blown as well as forty samples of skim milk powder used for its manufacture were collected from dairy plant. Each sample of processed cheese was thouroughly mashed in a sterile electric mixer before being examined/

Anaerobic count was done according to ICMSF (1978) using Reinforced Clostridium Medium (RCN). Plates were incubated anaerobically at 37°C for 48 hrs in Gas Pak containing CO_2 & H_2 kits with Methlene Blue (MB) indicator.

The isoalte anaerobic cultures were isolated, purified and identified according to Wills (1977).

RESUTLS AND DISCUSSION

All results obtained are presented in tables (1 and 2). Results given in Table (1) show that colstridia could be isolated from all examined samples of procesed cheese (100%) with a count ranged from 1.0×10^2 - 1.7×10^5/gm.

Simialr incidence was reported by Al-Ashmawy et al., (1977), While lower incidence and count were reported by Salam (1981), Ibrahim (1986) and Nazem (1992).

Clostridia organisms could be detected in 75% of examined samples of skim milk powder with a count ranged from 2×10^2 - 2×10^5/gm. Nealry similar count was reported by Helmy et al. (1980), while lower incidence and count were obtained by Ahmed (1987).

Clostridium perfringens, Cl. sporogenes, Cl. biefermentus, Cl. cadaveris and Cl. butyricum were isolated at percentage of 62.5, 15, 10,10 and 2.5 in examiend cheese samples respectively. The same isolates were also recovered from the milk powder examined samples at varying percentages ranging from 3.3 - 73.3% except Cl. oceaniucum which failed to be detected in cheese examined samples (Table 2). Nearly similar isolated were recovered from processed cheese by Salam (1981) and Ibrahim (1986) and in skim milk powder by Ahmed (1987).

Members of genus clostridia are widely distributed in nature, in soil, water and intestinal tract of man and animals. Therefore, their presence in dairy products is an indication of faecal or soil contamination (Gudkov and Dolidz, 1975).

Cl. perfringens showed to be the most frequent gas forming clostridia in examined processed cheese. The organism is responsible for outbre of food poisoning (Loewenstein, 1972), prese of 1 million organism per gram was necessary produce food poisoning (Diseke and Elek, 195 Cl. sporogenes, Cl. butyricum, Cl.biferment and Cl. tyrobutyricum are responsible for l blowing of cheese, putrifaction and spoilage processed cheese. Therefore, their presence in t product are responsible for it's inferior quali resulting in economic losses (Frazier & westho 1983 and Robinson, 1983).

From the results achieved one may safe conclude that skim milk powder used f manufacture as well as the neglected sanita measures adopted during processing and handli proved to be responsible for the defect in t examined processed cheese. The problem wa solved by using high quality milk powder an strict hygienic measures were performed duri cheese production.

Table 1: Statistical analytical results of clostridial count/gm. in examined samples

Type of smaple	No. of samples	Positive		Clostridial count/gm cheese			
		No.	%	Min.	Max.	Mean	SEM
Processed cheese	40	40	100	1.0x102	$1.7x10^5$	$2.9x10^4$	$1.6x10^4$
skim milk powder	40	40	75	2 x 102	2 x 10^5	$8.5x10^4$	$0.4x10^4$

Table 2: Incidence of isoalted clostridia from examined sampels

Isolates	Type of sample skin			
	Processed cheese		Milk powder	
	No. of ± samples	%	No. of ± samples	%
Clostridium perfringens	25	62.5	22	73.3
Cl. sporogenes	6	15	3	10.0
Cl. biefermentus	4	10	2	6.7
Cl. cadaveris	4	10	1	3.3
Cl. butyricum	1	2.5	1	3.3
Cl. oceanicum	0	0	1	3.3
Total	40	100	30	100

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