GC96 - Development of RF pasteurized chili powders in MCIH heavy cheese cake

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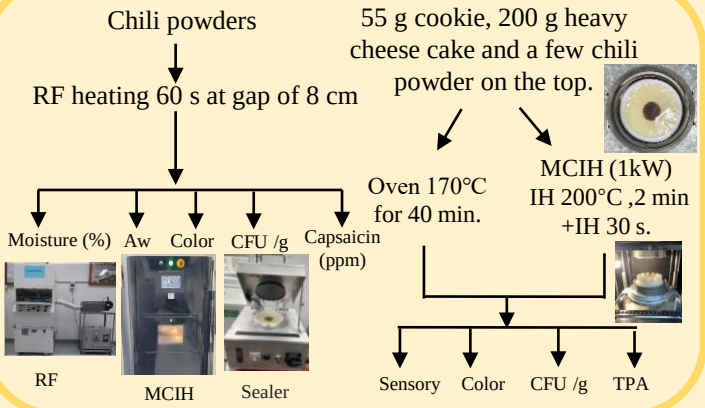
Abstract

Radio frequency (RF) was pasteurized the chili powders in order to decrease total count (CFU/ g) from 1.3x105 to 6.6x103; however, moisture, water activity, capsaicin of RF heated 60 s chili powder were significantly decreased ($p<0.05$). Then chili powders were sprinkled to cheese cake pastes which were baked by microwave combined induction heating (MCIH) at 1kW microwave with 200˚C induction for 2 min then IH 30 s, and 170℃ oven for 40 min, respectively. There was no significant difference in sensory evaluation between these two chill heavy cheese cakes ($p>0.05$). Therefore, RF and MCIH can be applied in chili cheese cake production to save time and energy, and improve the food safety.

Introduction

The *Trinidad Scorpion* Butch T is the hottest peppers in the world; however, there is microbial contamination in spice dry food, although it is not easy to grow bacteria during storage. When the RF heating system is applied in pasteurization of chili, it is not only save time and energy, but also improves the food safety. MCIH is used for cake baking, it has much faster than traditional oven baking. Therefore, the objectives were to development of RF pasteurization of chili and MCIH for chili cheese cake.

Experimental design



Results and discussion

Table 1. Effect of RF heating 60 s on the quality change of chili powders

Quality item	Before RF 60 s heating	After RF 60 s heating(92℃)
Moisture (%)	11.04±0.04	7.08±0.03
Water activity	0.55±0.007	0.37±0.0009
Capsaicin (ppm)	4227.03	3331.93
Color L*	31.24±0.82	33.15±0.48
Color a*	12.96±0.46	13.23±0.05
Color b*	16.48±0.66	15.93±0.15
CFU/ g	1.3x10^5	6.6x10^3

Table 2. Total count of bacteria of MCIH heavy cheesecake during storage

Temperature	0 Day	3 Day	7 Day
4˚C	ND	ND	ND
25˚C	ND	ND	ND

Table 3. Color analysis (Lab) of heavy cheesecake by MCIH

Status	L*	a*	b*
Before MCIH	82.68±1.17	-1.36±0.13	15.46±1.48
After MCIH	77.17±1.27	-1.66±0.18	19.22±1.54

Table 4. Texture Profile Analysis (TPA) of heavy cheesecake

Treatment	Hardness	Adhesiveness	Springiness	Cohesiveness	Gumminess	Chewiness	Resilience
MCIH +IH	355.57	-186.43	0.62	0.19	65.86	42.46	0.03
Oven	208.14	-125.90	0.55	0.35	66.59	36.36	0.07

Table 5. Consumer 9-point-scale hedonic sensory evaluation of chill heavy cheese cakes (n=30)

		Appearance	Flavor	Texture	Spiciness	Aftertaste	Overall
MCIH		6.18 ±2.23	5.68 ±1.85	6.21 ±1.87	5.25 ±2.01	5.46 ±2.32	5.57 ±1.69
Oven		6.37 ±1.93	5.41 ±1.97	7.00 ±1.47	5.48 ±2.31	5.19 ±2.02	5.41 ±1.76

Conclusions

RF heating for chili powder can significantly decrease total count, moisture, Aw, capsaicin were also decreased to improve the food safety, MCIH can be used in the cake baking, which is time consuming process and improve safety.