

Noodle Property made of the Composite Flours of a Korean Waxy Wheat Variety, Sinmichal

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찰성밀 첨가국수의 품질특성

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Objectives

This study was carried out to verify the noodle property of the composite flour of a Korean waxy wheat variety, Sinmichal, with the addition rates.

Materials and Methods

- Preparation of composite flours :
 - Base flour : Keumgangmil, Olgeurumil, 3 Commercial flours (Hard, Semi-hard, Soft)
 - Addition rates of Sinmichal to base flour : 0, 10, 20, 30, 40% by weight basis
- Keumgang and Olgeurumil flours : Prepared from Buhler Pilot Mill (Buhler, Swiss)
- Noodles were made by 31% addition rate of 2% - aqueous sodium chloride solution to the composite flours.
- Cooking property of noodles was measured after 10 and 15 minutes of boiling.
- Textures of cooked noodle were measure by Texture Analyser (TA. XT2 Stable Micro System, S Ltd UK)

Results and Discussion

1. Water absorption and expansion rates of noodles after 10 minutes of boiling were high in order of commercial soft flour, Olgeuru, commercial semi-hard flour, commercial hard flour, and Keumgang.
2. The water absorption rate of cooked noodle increased with addition rates of Sinmichal up to 30%, yet more or less decreased at 40% addition rates. It was found out that the optimal addition rate of Sinmichal was about 20%.
3. From the observation that the noodles made of composite flour of Sinmichal showed the rapid water absorption rates in 10 minutes of boiling compared with those of commercial flour, it was strongly suggested that the addition of Sinmichal can curtail the cooking time a little compared to common noodles.
- 4 The addition effects of Sinmichal were better in the hard wheat flour than the soft wheat.
5. The addition of Sinmichal to common wheat flours makes the noodle texture to be more soft and sticky.

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Table 1. Cooking properties of the noodles made of composite flours of two Korean wheat flours and a waxy wheat flour, Sinnichal, at different addition rates.

Noodle composition	10 minute boiling			15 minute boiling		
	Water absorption (%)	Expension rate (ml/10g)	Soluble solid (%)	Water absorption (%)	Expension rate (ml/10g)	Soluble solid (%)
Keumgang (Keum)	325	30.7	5.23	365	35.0	5.91
Keum 90% + Sinnichal 10%	330	31.8	5.57	362	34.0	6.81
Keum 80% + Sinnichal 20%	336	32.5	5.43	380	36.0	6.27
Keum 70% + Sinnichal 30%	337	34.0	6.99	385	37.0	6.98
Keum 60% + Sinnichal 40%	344	35.0	5.38	392	37.3	6.41
Olgeurumil (Ol)	375	35.3	6.03	428	40.5	6.98
Ol 90% + Sinnichal 10%	381	35.8	6.00	420	40.5	6.48
Ol 80% + Sinnichal 20%	381	34.5	5.91	425	41.0	7.12
Ol 70% + Sinnichal 30%	384	36.0	5.95	429	42.0	7.15
Ol 60% + Sinnichal 40%	380	36.0	5.29	421	40.0	7.08

Table 2. Cooking properties of the noodles made of composite flours of commercial flours and a waxy wheat flour, Sinnichal, at different addition rates.

Noodle composition	10 minute boiling			15 minute boiling		
	Water absorption (%)	Expension rate (ml/10g)	Soluble solid (%)	Water absorption (%)	Expension rate (ml/10g)	Soluble solid (%)
Commercial hard wheat(CHW)	349	32.5	5.59	399	38.8	6.65
CHW 90% + Sinnichal 10%	351	32.3	5.35	401	38.0	6.23
CHW 80% + Sinnichal 20%	351	32.0	5.42	400	38.3	6.27
CHW 70% + Sinnichal 30%	358	35.0	5.22	417	39.0	6.51
CHW 60% + Sinnichal 40%	362	34.0	5.20	417	38.0	6.10
Comm.semi-hard wheat(CMW)	372	34.3	5.53	420	40.0	6.49
CMW 90% + Sinnichal 10%	380	35.0	5.99	427	40.5	6.60
CMW 80% + Sinnichal 20%	380	34.0	5.78	423	40.3	6.60
CMW 70% + Sinnichal 30%	376	34.5	6.31	430	40.3	6.70
CMW 60% + Sinnichal 40%	367	33.0	5.03	421	40.0	5.87
Commercial soft wheat (CSW)	387	35.0	5.41	435	41.0	7.07
CSW 90% + Sinnichal 10%	393	36.0	6.54	438	41.3	6.67
CSW 80% + Sinnichal 20%	389	36.0	5.83	430	41.0	6.83
CSW 70% + Sinnichal 30%	397	36.0	6.21	453	42.5	7.55
CSW 60% + Sinnichal 40%	387	35.0	5.92	438	40.5	6.93

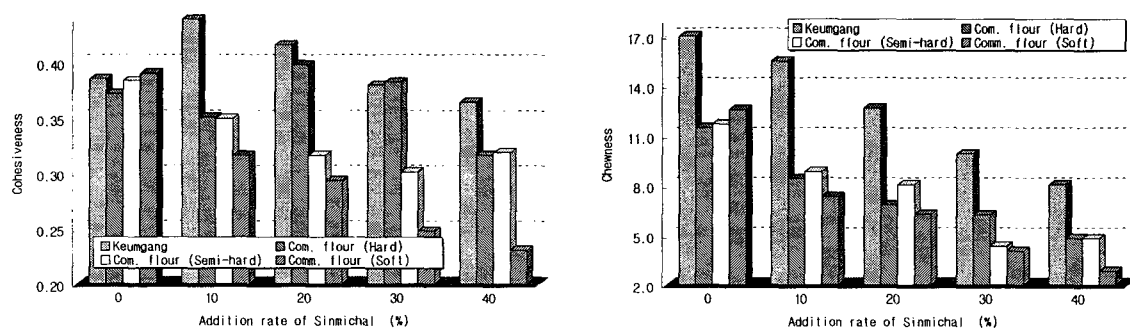


Figure 1. Noodle texture properties of composite flour with addition rate of Sinnichal after 10 minute cooking.