# Analysis of Nutritional Composition and Food Safety of Developed Porridge Menu

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## Introduction

**Chickens contain unsaturated fatty acids and the linoleic acid. It helps prevent cancer and prevent vascular diseases such as heart disease and arteriosclerosis. This study was conducted to evaluate the effects of chicken breast contents (different rice amount 30 g, 40 g, 50 g) on the physicochemical and sensory characteristics of chicken porridge for patients with liver cancer who should intake less than protein 30 g for a day.**

## Materials and Methods

**Materials : Rice, Chicken breast, Carrot, Red onion, Shiitake mushroom, scallion, Garlic, Salt Sesame oil**

**Table 1. Formulas for manufacturing chicken porridge**

| Ingredient Unit : g, Stock : mL | Sample[1)] | | |
|---|---|---|---|
| | RC30 | RC40 | RC50 |
| Rice | 30 | 40 | 50 |
| Chicken breast | 30 | 30 | 30 |
| Carrot | 7 | 7 | 7 |
| Red onion | 6 | 6 | 6 |
| Shiitake mushroom | 7 | 7 | 7 |
| Scallion | 3 | 3 | 3 |
| Garlic | 4 | 4 | 4 |
| Salt | 1 | 1 | 1 |
| Sesame oil | 2 | 2 | 2 |
| Chicken stock | 300 | 300 | 300 |

[1)] RC30: chicken porridge with rice 30 g, chicken breast 33.3%; RC40: chicken porridge with rice 40 g, chicken breast 30%; RC50: chicken porridge with rice 50 g chicken breast 27.2%.

| | |
|---|---|
| Preparation | Put washed rice in water for about 30 minutes. |
| | Carrot, shitake mushroom and scallion are chopped. |
| | Put some water, chicken and garlic in a pot are boiled for about 20 minutes. (Make some chicken stock) |
| | The boiled chicken breast are put out and torn. |
| Cooking | Rice are fried with sesame oil until making bright. and then put some carrot, shitake mushroom and 300ml chicken stock for boiling. |
| | Add torn chicken breast, chopped scallion and salt and mixing. |

**Fig. 1. Manufacturing of chicken porridge with different rice amount.**

**⊙ Viscosity & Spreadability**

- **Brookfield viscometer(DV-II, Brookfield Engineering Laboratories, INC., Middleboro, MA, USA**
- **line spread chart**

**⊙ Nutritional composition**

- **CAN-PRO 5.0 (Web ver.)**

**⊙ Microbial counts**

- **Food public code : *Staphylococcus aureus, Salmonella spp. E. coli O157:H7***

**⊙ Statistic analysis**

- **SPSS(ver. 24) , ANOVA, Duncan's multiple range test($p$<0.05)**

## Results

**Table 2. Viscosity and spreadability of chicken porridge with different rice amount**

| characteristics | Sample[1)] | | |
|---|---|---|---|
| | RC30 | RC40 | RC50 |
| Viscosity | 6331.33±25.01$^{b}$ | 6813.10±24.44$^{b}$ | 7055.21±16.23$^{a}$ |
| Spreadability | 6.55±0.02$^{a}$ | 6.32±0.01$^{b}$ | 6.01±0.01$^{c}$ |

1) RC30: chicken porridge with rice 30 g, chicken breast 33.3%; RC40: chicken porridge with rice 40 g, chicken breast 30%; RC50: chicken porridge with rice 50 g chicken breast 27.2%.
Data represents Mean±S.D. Values with same superscripts in a row are not significantly each other at $p<0.05$ by the Duncan's multiple range test.

**Table 3. Nutritional composition of chicken porridge with different rice amount**

| Nutrients | Sample[1)] | | |
|---|---|---|---|
| | RC30 | RC40 | RC50 |
| Energy (kcal) | 199.3 | 234.6 | 269.9 |
| Carbohydrate (g) | 26.41 | 34.26 | 42.11 |
| Dietary fiber (g) | 1.69 | 1.82 | 1.95 |
| Protein (g) | 7.89 | 8.46 | 9.03 |
| Lipid (g) | 6.13 | 6.14 | 6.15 |
| Cholesterol (mg) | 0 | 0 | 0 |
| Sodium (mg) | 357.66 | 358.16 | 358.66 |
| Potassium (mg) | 0.885 | 1.025 | 1.165 |
| Calcium (mg) | 12.11 | 12.71 | 13.31 |
| Vitamin A (mg) | 60.77 | 60.80 | 60.83 |
| Vitamin D (mg) | 0.147 | 0.147 | 0.147 |
| Vitamin C (mg) | 2.88 | 2.88 | 2.88 |
| Vitamin $B_2$ (mg) | 0.13 | 0.14 | 0.14 |

1) RC30: chicken porridge with rice 30 g, chicken breast 33.3%; RC40: chicken porridge with rice 40 g, chicken breast 30%; RC50: chicken porridge with rice 50 g chicken breast 27.2%.

**Table 4. Microbial counts (CFU[1)]/g) of the chicken porridge with rice 40 g**

| Microorganism | RC40 |
|---|---|
| *Staphylococcus aureus* | ND[2)] |
| *Salmonella spp.* | -[3)] |
| *E. coli O157:H7* | - |

[1)] CFU: cell-forming unit
[2)] ND: not detected.
[3)] -: negative

## Conclusions

**The chicken porridge showed lower spreadability and higher viscosity values as the rice content increased. The nutritional composition of chicken porridge was as follows: energy, 199.3~269.9 kcal; carbohydrate, 26.41~42.11 g; protein, 7.89~9.03 g; lipid, 6.13~6.15 g; sodium, 357.66~358.66 mg; potassium 0.885~1.165 mg; calcium, 12.11~13.31 mg; vitamin A, 60.77~60.83 mg; vitamin D 0.147 mg; vitamin C 2.88 mg and vitamin $B_2$ 0.13 ~0.14 mg.**

**The chicken porridge with rice 40 g sample were confirmed microbiologically safe according to the food code applied to food manufacturers.**

**This research was partially supported by Korean Society of Food Culture.**

KSFC 사)한국식생활문화학회 Korean Society of Food Culture