**Tables**

***Table 1:*** Formulations of full fat and fat-reduced sausage.

|  |  |  |
| --- | --- | --- |
| Samples | | |
| Ingredients  (%, w/w) | *Full fat sausage* | *Fat-reduced sausage* |
| Pork fat | 29.7 | 9.7 |
| Bovine meat | 23.5 | 33.5 |
| Pork meat | 23.5 | 33.5 |
| Sodium chloride | 2.2 | 2.2 |
| Sodium nitrite | 0.01 | 0.01 |
| Sodium triphosphate | 0.4 | 0.4 |
| Sugar | 0.5 | 0.5 |
| Citric acid | 0.2 | 0.2 |
| Cornstarch | 1 | 1 |
| Ascorbic acid | 0.05 | 0.05 |
| Condiments | 1 | 1 |
| Water (Ice) | 18 | 18 |

***Table 2:*** Range of levels selected for the variables: bovine plasma protein (*BPP*), inulin (*I*) and carrageenan (*C*).

|  |  |  |  |
| --- | --- | --- | --- |
| Factor (%,w/w) | Low level (-1) | Central point (0) | High level (+1) |
| *BPP* | 0 | 2.5 | 5 |
| *I* | 0 | 2.5 | 5 |
| *C* | 0 | 0.02 | 0.04 |

***Table 3*:** Performed test made in function of the combination of the different levels of ingredients: bovine plasma protein (*BPP*), inulin (*I*) and carrageenan (*C*).

|  |  |  |  |
| --- | --- | --- | --- |
| Formulations | | | |
| Test | *x1 (BPP)* | *x2(I)* | *x3(C)* |
| 1 | +1 | +1 | +1 |
| 2 | -1 | +1 | +1 |
| 3 | +1 | -1 | +1 |
| 4 | +1 | +1 | -1 |
| 5 | -1 | -1 | +1 |
| 6 | -1 | +1 | -1 |
| 7 | +1 | -1 | -1 |
| 8 | -1 | -1 | -1 |
| 9 | 0 | 0 | 0 |

**Table 4.** Composition analysis (g/100g) of different sausages formulated.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Samples** | **Composition (%,w/w)** | | | |
| **Moisture** | **Ash** | **Protein** | **Fat** |
| **1-BPP+I+C** | 58.87 ± 0.28a | 3.76 ± 0.15a | 19.21 ± 0.10a | 16.07 ± 0.87a |
| **2-I+C** | 63.32 ± 0.39b | 3.20 ± 0.04a | 16.55 ± 0.08b | 14.27 ± 3.27a |
| **3-BPP+C** | 61,58 ± 0.95c | 3.84 ± 0.07a | 21.87 ± 0.11c | 13.76 ± 1.14a |
| **4-BPP+I** | 70.94 ± 2.40d | 2.98 ± 0.40a | 18.89 ± 0.06a | 12.16 ± 0.28a |
| **5-C** | 64.69 ± 0.50e | 3.98 ± 0.40a | 18.82 ± 0.09a | 14.93 ± 0.34a |
| **6-I** | 60.45 ± 0.17c | 4.03 ± 0.07a | 17.65 ± 0.09d | 13.22 ± 0.39a |
| **7-BPP** | 62.11 ± 0.06b,c | 3.87 ± 0.06a | 20.23 ± 0.10e | 14.94 ± 1.13a |
| **8-Control** | 65.05 ± 0.08e | 3.35 ± 0.05a | 17.17 ± 0.09d | 14.98 ± 3.67a |
| **9-BPP+I+C** | 61.41 ± 0.50c | 3.60 ± 0.08a | 18.90 ± 0.09a | 15.15 ± 0.65a |
| **Full fat** | 62.89 ± 0.08b | 3.77 ± 0.13a | 10.07 ± 0.06f | 26.87 ± 3.91b |

Values in a column with the same letter are not significantly different from each other at *P*>0.05.

**Table 5.** Emulsion stability (total fluid release, TFR) and cooking loss (CL) of fat-reduced sausages.

|  |  |  |
| --- | --- | --- |
| **Samples** | **TFR (%)** | **CL (%)** |
| **1-BPP+I+C** | 21.03 ± 0.51a | 6.6 ± 0.3a |
| **2-I+C** | 18.24 ± 0.45b | 4.4 ± 0.2b |
| **3-BPP+C** | 12.23 ± 0.99c | 4.5 ± 0.2b |
| **4-BPP+I** | 19.03 ± 0.23b | 3.7 ± 0.2c |
| **5-C** | 23.83 ± 0.44d | 8.9 ± 0.5d |
| **6-I** | 28.56 ± 1.46e | 9.0 ± 0.4d |
| **7-BPP** | 20.44 ± 0.83a | 5.5 ± 0.3e |
| **8-Control** | 24.45 ± 0.69d | 11.2 ± 0.7f |
| **9-BPP+I+C** | 22.47 ± 1.98a | 11.3 ± 0.6f |
| **Full fat** | 19.90 ± 2.32a | 7.7 ± 0.4g |

Values in a column with the same letter are not significantly different from each other at *P*>0.05.

**Table 6.** Texture profile analysis of the different samples of fat-reduced sausages.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Samples** | **Hardness**  **(N)** | **Cohesiveness** | **Springiness** | **Chewiness**  **(N)** |
| **1-BPP+I+C** | 41.85±4.56a | 0.81±0.04a | 6.7±0.4a | 227.1±34a |
| **2-I+C** | 22.45±0.77b | 0.84±0.02a | 6.5±0.3a | 122.6±3.7b |
| **3-BPP+C** | 27.30±0.54c | 0.86±0.05a | 6.0±0.5a | 140.9±4.2c |
| **4-BPP+I** | 27.78±1.40c | 0.84±0.07a | 6.5±0.4a | 151.7±7.6c |
| **5-C** | 21.83±2.05b | 0.75±0.02a | 6.8±0.2a | 111.3±10.0b |
| **6-I** | 19.46±1.68b | 0.84±0.05a | 6.7±0.3a | 109.5±9.8b |
| **7-BPP** | 22.33±4.19b | 0.83±0.02a | 5.7±0.5a | 105.6±19.3b |
| **8-Control** | 20.61±3.10b | 0.79±0.03a | 6.6±0.4a | 107.5±16.1b |
| **9-BPP+I+C** | 35.03±4.53d | 0.82±0.03a | 6.8±0.4a | 195.3±25.2d |
| **Full fat** | 14.87±1.25e | 0.71±0.02b | 8.9±0.6b | 94.0 ±7.5e |

Values in a column with the same letter are not significantly different from each other at *P*>0.05.