

## THE ROLE OF INULIN AS A FAT REPLACER IN THE LOW-FAT OSHARI-LIKE CHEESE PHYSICO-CHEMICAL, TEXTURAL AND SENSORY PROPERTIES

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### Abstract

The study's importance lies in inulin's role in its use in the field of dairy product manufacture due to its essential properties, including the property of gelatin and its non-impact on flavor and texture. The study aimed to determine the effect of using inulin as a fat substitute on the physical, chemical, textual, and sensory properties of low-fat Oshari-like cheese.

Cow milk from Al-Diwaniyah Dairy Factory, microbial rennet (*M. meihei*), the strains *Lactococcus lactis* spp. *lactis* and *Lactococcus lactis* spp. *cremoris*, and the inulin from the company ME Scientific Engineering (England) were used in the study to manufacture Oshari-like cheese. The cheese was manufactured by taking a quantity of full-fat cow's milk from Al-Diwaniyah dairy factory. The experiment was divided into five treatments represented by the: Oshari-like cheese manufactured from full-fat milk (positive control treatment - C+), Oshari-like cheese manufactured from low-fat skimmed milk (negative control - C-), and the Oshari-like cheese manufactured from low-fat milk to which inulin has been added as the fat replacer in the proportions of: 0.5, 1, and 1.5% (treatments T1, T2, and T3 respectively). All cheeses ripened for three months. The total acidity was estimated by titrating with sodium hydroxide (0.1N), the percentage of fat was estimated using the Kerber method, the carbohydrates were mathematically estimated by the difference of components, the soluble nitrogen and non-protein nitrogen were estimated using the Kjeldahl method, the percentage of moisture was estimated using a drying oven, and the ash was estimated using a burning furnace. With the use of a texture analyzer with a 5 kg carrying force, the cheese's texture characteristics were calculated. Additionally, professionals in the dairy industry by panel test conducted a sensory assessment of the finished cheese treatments.

The results showed that combined inulin cheese treatments (T1, T2, and T3) had greater moisture ratios than positive (C+) and negative (C-) control treatments; however, with 90-day ripening, moisture values in all treatments decreased, while protein and ash in combined inulin cheese treatments (T1, T2, and T3) increased compared to positive (C+) and negative control (C-) and continued to rise as the ripening process continued for 90 days. , a specific decrease in the total acidity values of all inulin-added therapies compared to negative control therapies (C-) has been seen. In addition, the combination of inulin and cheese led to a slight decrease in the values of the organoleptic properties of treatments compared to positive (C+) and negative (C-) control treatments and the inclusion of inulin in the resulting cheese also enhanced the values of texture tests, which included the hardness, springiness, and cohesiveness. Finally, the addition of insulin as a fat substitute for the production of Oshari-like cheese led to a slight decrease in sensory evaluation values compared to the positive and negative control samples, also there was a decrease in the sensory evaluation values within the same treatment during maturation at 8 °C for 90 days.

In conclusion, Inulin was used as a fat alternative for making low-fat oshari-like cheese, and this raised the cheese's quality standards.

**Key words:** Inulin, Oshari-Like cheese, Physicochemical properties.