

# The Effect of Adding Aqueous Extract of Olive Leaves on Prolonging the Shelf Life of Arabic Bread

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**Abstract.** The purpose of this article is to rank potential methods for extending the shelf life of Arabic bread. The majority popular kind of bread consumed in world is Arabic bread (AB). It is made from wheat flour which is regarded as having little nutritional value, the phenols and moisture were assessed. This investigation looked at the shelf life of arabic bread that was kept at 25 °C for three days, using two levels of olive leaf extract 4 and 8%, at the end of the three-day storage period, The findings showed that the yeast-mold counts in control rose to 5.77 log CFU/g, However those that contain 8% OLWE showed lower value was 3.47 log cfu/g).beside the total bacteria in control rose to 5.95log cfu/g, while those containing 8% OLWE showed lower value than 3 was 2 log cfu/g), the OLWEs had a favorable impact on the wheat loaves' microbiological shelf life when they were kept at 25 °C.

**Keywords.** Olive leaf extract, Storage, Arabic bread, Shelf life, Phenol.

## 1. Introduction

Depending on food laws, the cost and availability of ingredients, public acceptance, and societal trends, bread can have its shelf life extended by adding a single ingredient, changing the method, or combining several different alterations [1]. An easy method of fortifying bread and other items whose processing involves the creation of dough is to replace water with an antioxidant aqueous extract. Numerous plant extracts that may find application in the food sector have been documented [2].The olive is the fruit of an evergreen olive tree that grows in the Mediterranean region's moderate climate. It is one of the most abundant fruit plants in these countries, covering eight million hectares and accounting for 98% of global agricultural production [3].

According to [4], olive leaves are a rich source of phenolic compounds, which are recognized for their healthful and antioxidant qualities, due to their technological and health benefits, olive leaf extracts have been suggested as natural food additives in food formulations with the goal of creating functional foods or extending the shelf life of existing products [5]. Olive leaf extracts are used because of their well-known antioxidant and antibacterial properties to prolong food storage. Thus, this study's goals were to assess the effects of using two concentrations of olive leaf extract (4 and 8%) on Arabic bread's shelf life.

## 2. Materials

December 2023 saw the gathered of fresh green olive leaves from the farms in Basrah, Iraq.

### 2.1. Making the Water Extract from Olive Leaves

With minor adjustments, water extracts were made in accordance with [6]. Instructions, after being manually gathered, the leaves were cleaned in deionized water and dried for three days at 37°C. after that, they were modified and stored in the refrigerator in light-protected glass bottles. 50 milliliters of distilled water and forty grams of dried olive leaves were blended into a homogenous mixture, after adding 40g of the pulverized material to 50 milliliters of distilled water that is boiling and boiling for 45 min, the mixture was allowed to infuse for 10 minutes at room temperature while stirring, after filtering the extracts through Whitman paper, the water extract was ready to be utilized right away to make Arabic bread. the preparation of the other concentration, which was 8%, was comparable.

### 2.2. Preparing Arabic Bread

WF was added to Arabic flatbreads in the formulation process using two different replacement strategies 4 and 8 % OLWE, the components for bread were made using a lean formula consisting of flour, sugar 2%, compressed yeast 2.0% and salt 1.5%, after combining the dry components, water was added to create the ideal dough, after five minutes of mixing, the dough was allowed to ferment for thirty minutes, during which it was manually rolled into loaves that were one centimeter thick, after 15 minutes at 27–30°C for a second proofing stage, the loaves were cooked for 1–2 minutes at 415°C and then they were cooled for 10–15 minutes. [7] states that after that, the samples were placed in plastic bags and kept for additional analysis.

### 2.3. Phenolic Compound and Antioxidant Activity

Phenolic and activity were determined by [8].

### 2.4. Microbiological Examination

Using the methodology described by [9] yeast and mold counts and Total viable bacteria were investigated, three duplicate microbiological analyses were carried out following zero, two, four and fifth days of storage, aseptic 10g Arabic bread samples were homogenized in a stomacher used for 60 seconds at 20±1 °C using 90 milliliters of sterile saline-peptone solution (8.5 g/L saline and 1 g/L peptone), Duplicates of 1 milliliters of each of the three suitable dilutions were spread on the following agar media, TYM which were incubated at 25 °C for 72 hours; PCA for TVB ,which was hatched at 25 °C for 48 h and medium and hatched at 30 °C for 48 h.

## 3. Results and Discussion

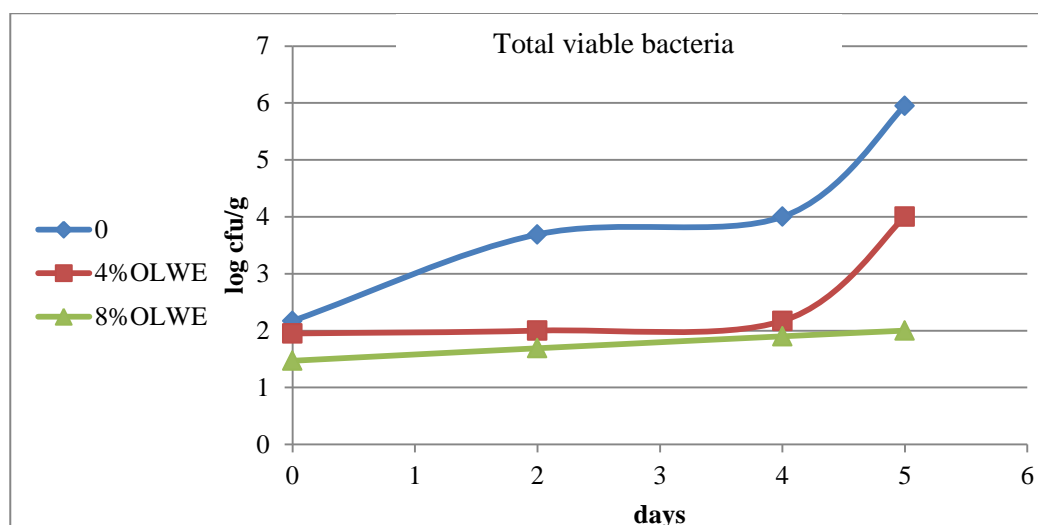
### 3.1. Total Amount of Phenol

Table 1 shows that the antioxidant activity of OLWE was 4vs and the total polyphenol content was 140 mg GAE g<sup>-1</sup>. This study's findings are consistent with a study by [8]. that found that OLWE had a the total polyphenol 134.7 ± 2.1a and antioxidant activity 4.26 ± 0.08a

The by-product of the olive oil business, olive leaf, can be utilized to increase the functional and nutritional value of food products, Olive tree leaves are abundant in bio phenols [10]. It is well known that olive leaf's phenolic compounds exhibit a variety of biological activities, these compounds may also be in charge of olive leaf's pharmacological effects or at the very least, they may reinforce them in a complementary way [11].

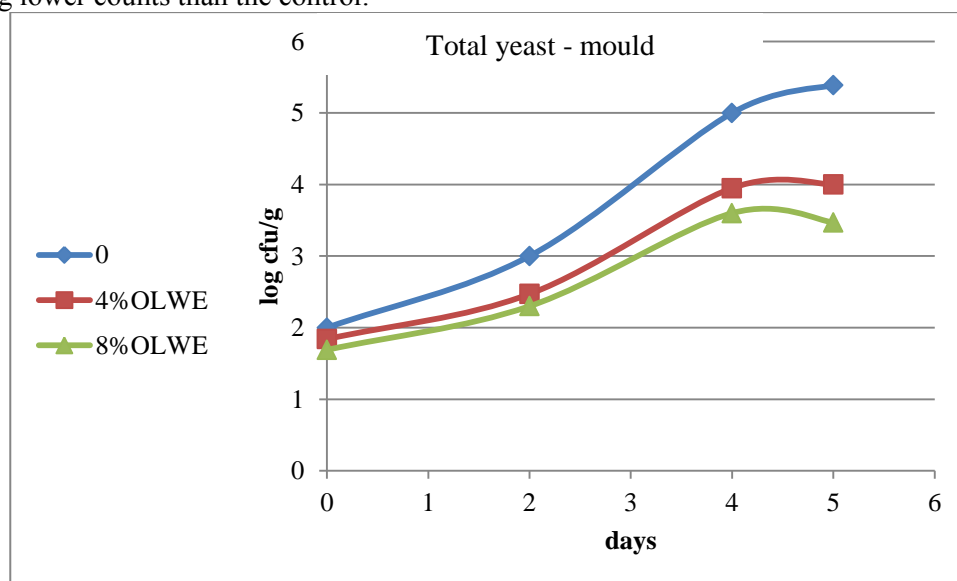
### 3.2. Calculating the Microbiological Load

The microbiological load, and multiplication of the Arabic bread were measured throughout the course of five days of storage. It is evident from the aforementioned data that the overall number of live bacteria grew as the storage duration increased compared to the control samples which were maintained at 25C, the samples containing 8% OLWE had fewer live bacteria content and yeast – mould content, every day, the bread samples were checked for obvious indications of microbial development on the crust.



**Figure 1.** Displays the bacteria growing of Arabic bread with varying olive leaves extract levels kept at 25 °C.

Fig.2 displays the overall mold-yeast growing of arabic bread with varying leaves extract levels kept at 25 °C. all of the samples' Total yeast - mould counts changed very much on the fourth day of storage, after four days of storage, ( $p \leq 0.05$ ) were discovered control sample's total yeast - mould counts rose to 5.39 log cfu/g whereas the samples with 4% or more OLWE concentrations continued to have TYM counts 3.47 log CFU/g and 4 log CFU/g. the Arabic bread sample containing 4 and 8% OLWE exhibiting lower counts than the control.



**Figure 2.** Displays the overall mold-yeast growing of Arabic bread with varying olive leaves extract levels kept at 25 °C.

Olive leaves have been demonstrated to slow down or stop the growth of a variety of fungi, which makes them a potential natural and alternative food additive [9].

After four days of storage, bread samples containing 4 and 8% OLWE showed an increase in total viable bacteria counts of nearly 4 and 2 log cfu /g while the standard microbiological load for baked goods in the baking industry's routine quality control tests has to be less than 3 log CFU/g for yeast and molds [12].

Under two expedited storage settings, olive leaf extracts (OLE) have been suggested as a natural antioxidant to extend biscuit stability [13], to demonstrate the magnitude of the OLWE effect, control samples that had exceeded the limit were retained for an extended period of time, even at the 8% level,

OLWE extended the shelf-life of Arabic bread for TYM counts from two days to more than three days, bread that has been contaminated with filamentous fungi should be eaten sooner rather than later, You can preserve wheat or common rye bread for three to four days. It was believed that the shelf-life extension could be more important at greater OLWE concentrations.

## Conclusions

Olive leaves are a potentially interesting ingredient for value-added bread applications since they are rich in phenolic compounds and may be obtained for free. The loaves with the highest phenolic contents were produced using extracts from olive leaves, olive leaf extract has the potential to be utilized as a natural antioxidant, this could have an impact on bread processors that struggle to optimize the quality of their goods. Over the course of the investigation, bread treated with olive leaf extract shown decreased bacteria counts, extending its shelf life. Thus, it has been shown that olive leaf extracts have the ability to preserve Arabic bread when kept.

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