



## ORIGINAL ARTICLE

## Assessment of Sodium Benzoate and Potassium Sorbate Preservatives and Artificial Color in Bulk Tomato Paste Samples in Qazvin, Iran

Peyman Ghajarbeygi<sup>1</sup>, Azam Rahimi Niaraki<sup>\*1</sup>, Ali Soltani Abkenar<sup>1</sup>, Razzagh Mahmoudi<sup>2</sup>, Fatemeh Jalilevand<sup>1</sup>, Ali Sadeghi Niaraki<sup>1</sup>, Ahad Alizadeh<sup>2</sup>

<sup>1</sup>Health Products Safety Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

<sup>2</sup>Medical Microbiology Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

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## KEYWORDS

Sodium benzoate;  
Potassium sorbate;  
Artificial color;  
High-performance liquid chromatography;  
Bulk tomato paste

**ABSTRACT:** Tomato is one of the popular crops in the world and tomato paste is a product of it. Due to its wide application, quality control of this product is important. The goal of our study was to the assessment of potassium sorbate and sodium benzoate preservatives and artificial color in bulk tomato paste samples in Qazvin, Iran. In this study, 45 samples were analyzed by high-performance liquid chromatography (HPLC) to determine the preservatives. Benzoic acid was detected in 17 (37.78%) samples, ranging from nd not detected to 1896 mg kg<sup>-1</sup> and Potassium sorbate was not detected in any of the samples. The detection of color in samples was done by the thin-layer chromatography method (TLC). Three samples (6.67%) had Pansio 4R artificial color. The mean and standard deviation of sodium benzoate in samples were 990.62 mg kg<sup>-1</sup> and 396.07 mg kg<sup>-1</sup>, respectively. According to the national standard of Iran for canned tomato paste, adding any kind of preservative and color to tomato paste is prohibited. The results show the importance monitoring of sodium benzoate and artificial colors in bulk tomato paste by health authorities.

## INTRODUCTION

Tomato is one of the most important and nutritious crops. It has desirable organoleptic properties and lycopene is its most abundant antioxidant. A variety of tomato products such as sauces, and canned food are produced, but the most common of them is tomato paste. Local and international laws and standards are legislated to protect consumer health. Adding extra water or cheaper bulk materials, artificial colors, and preservatives to tomato paste is banned [1].

Food additives consist of one substance or a mixture of substances that are not the main component of food. They are added to food for production, processing, storage, and packaging. Additives include preservatives that are intentionally added to the food production

process to prevent microbial spoilage and undesirable changes and increase the shelf life of food. Preservatives and antimicrobials play an important role in providing safe and sustainable foods. Some preservatives, such as sulfides, nitrates, and salt have been used for centuries in meat and wine processing. The choice of an antimicrobial agent depends on a variety of factors, such as the antimicrobial spectrum of the preservative, the physical and chemical properties of the food and preservative, and storage conditions [2, 3].

Among the preservatives used in food are benzoate and sorbate. Benzoate at low pH and acidification of the intracellular environment are the most important factors inhibiting the growth and proliferation of yeast and mold.

\*Corresponding author: ar.rahimi@yahoo.com (A. Rahimi Niaraki)  
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