Simultaneous Analysis of Food Preservatives

- High-resolution simultaneous analysis of preservatives
- Best balance of analysis time and separation
- Ease of use, performance and reliability design

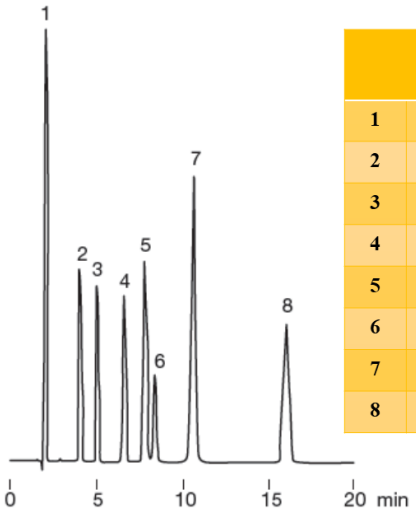
Ozone is a commonly applied disinfectant and oxidant in drinking water and has more recently In order to keep food safe from deterioration, different additives have been intentionally added to it, not only to stop or delay nutritional losses due to microbiological, enzymatic or chemical changes but also to increase its shelf life. Food preservation is often made with the use of chemical preservatives, such as benzoic and sorbic acids and their respective sodium, potassium and calcium salts, which have been widely used around the world. These chemicals are generally used for inhibiting yeast and mold growth, besides being effective against a wide range of bacteria. Another group of substances which has been commonly employed as preservatives in food and in personal care products and pharmaceuticals is composed of parabens. They are esters of *p*-hydroxybenzoic acid, with alkyl substituents ranging from methyl to pentyl or benzyl groups. Parabens have become a popular preservative due to certain properties, such as a broad spectrum of activity against yeasts, molds and bacteria, chemical stability, low production cost and no perceptible odor or taste[1].

Although these chemicals have widely aimed at preservation, adverse effects have been reported, even when they are used at low doses. It was suggested that sorbic acid or sorbate may convert to mutagenic products when reacted with nitrite at high temperature and high concentration. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) has set the maximum acceptable daily intake (ADI) for benzoate, sorbate, and methylparaben at 5 mg/kg, 25 mg/kg, and 10 mg/kg. Even though methylparaben doesn't gather in the body, many customers are worried about the safety of methylparaben due to its potential carcinogen nature.

Many methods exist for detecting preservatives in food. The most common analytical technique is high performance liquid chromatography[2].

The Food Additive Analyser from ISS is a specialized system based on HPLC system coupled with a UV-Vis detector to determine preservatives in foodstuff. In Figure 1, an example of food preservatives by one of Shodex's column can be seen. Our developed HPLC method has high specificity, requires minimal sample preparation time, and does not necessitate derivatization.

[1] Food Chemistry 293 (2019) 112–119
[2] Journal of Food Composition and Analysis 126 (2024) 105907



	Samples	Concentrations
1	Saccharin sodium	0.005 %
2	P-Hydroxybenzoic acid	0.005 %
3	Sorbic acid	0.02 %
4	Benzoic acid	0.02 %
5	Methyl paraben	0.01 %
6	Dehydroacetic acid	0.01 %
7	Ethyl paraben	0.02 %
8	Propyl paraben	0.02 %

Fig.1 Food preservatives analysis using UV/Vis absorption