Determination of sodium N-cyclohexylsulfamate in food

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Experimental background

Sodium N-cyclohexylsulfamate, also known as "Sodium cyclamate", is commonly used as food sweeteners in food prodution. It is a non-nutritional sweetener with the sweetness that is 30-40 times of regular table sugar. It serves as an internationally accepted food additives that can be used in refreshing beverages, juices, ice cream, pastry food, preserved fruit, etc. If consumers often have beverages or other foods with excess sweetener content, it may harm the liver and nervous system due to excessive intake.

At present, the detection methods of food sweetener content include: LC, GC, LC-MS, ion-exchange chromatography, etc. This method refers to "GB/T 5009.97-2016 determination of Sodium N-cyclohexylsulfamate in food". The sample was extrated with water, followed by reaction with sodium hypochlorite in strong acidic solution, forming N,N-Dichlorocyclohexanamine. High performance liquid chromatography (HPLC) was used for analysis after extraction with n-heptane. Retention time is used for qualitative analysis, and external reference method is used for quantitive analysis.

Experimental

Column: SVEA C18 Gold 5µm 110Å 4.6*250mm

Instrument: HPLC

Mobile phase: Methanol:water=90:10(v:v)

Flow rate: 1.0 mL/min

Column temperature: 35 °C

Detector: UV 314 nm

Extractant: Water

Injection volume: 10µL

Analyte: Sodium cyclamate 10 µg/mL

Chromatogram

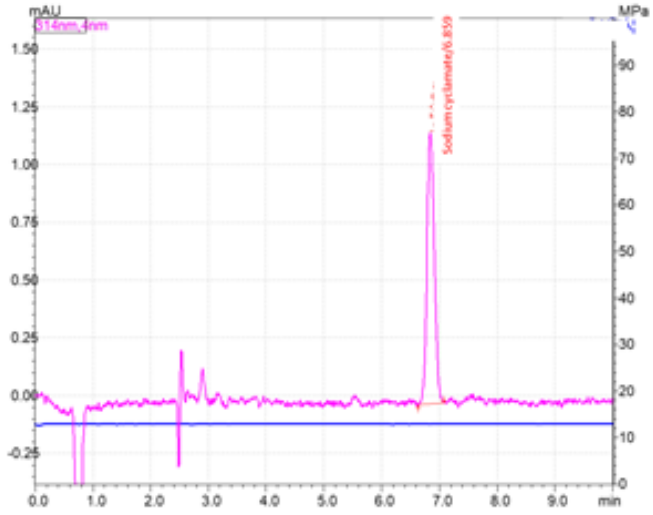

Figure 1: Standard chromatogram of sodium cyclamate.

Results

ID#	Analyte	Retention time (min)	AUC	Peak height	Concentration (µg/mL)
1	Sodium cyclamate	6.859	175908	9358	10

Conclusion

This method uses SVEA C18 Gold 5µm 110Å 250*4.6mm HPLC Column for the analysis of Sodium cyclamate. The analysis only takes 10min. This method is fast and simple with reliable results and good reproducibility. The recovery rate is between 80%-110% that is suitable for most analysis of sodium cyclamate in foods.