

# APPLICATION NOTE

**WynSep**  
Adaptive Separation

## Determination of Artificial Sweeteners in Drinks

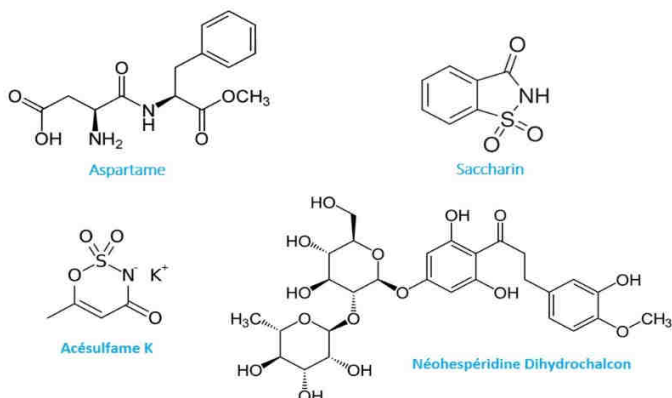
Developments carried out by BTS Anabiotech Students  
of Le Gros Chêne High School



Most soft drinks contain a combination of food additive such as Artificial Sweeteners (AS). The most commonly used AS are Aspartame, Acesulfame K, Saccharin, and Neohesperidin Dihydrochalcone (NHDC). Each of which may be used individually or blended with sugars or one or more of the others. A High-performance capillary electrophoretic method with UV detection was developed to analyze these four AS. In the optimized separation conditions, the 4 targeted compounds were resolved in 6 minutes. This method was then applied to the analysis of soft drinks. This development was carried out as part of experimental projects in Le Gros Chêne HighSchool (France).



### COMPOUNDS



### ANALYTICAL CONDITIONS

**Buffer :** Borate + SDS, pH 9.2

**Capillary :** silica bare-fused, I.D. = 75  $\mu$ m

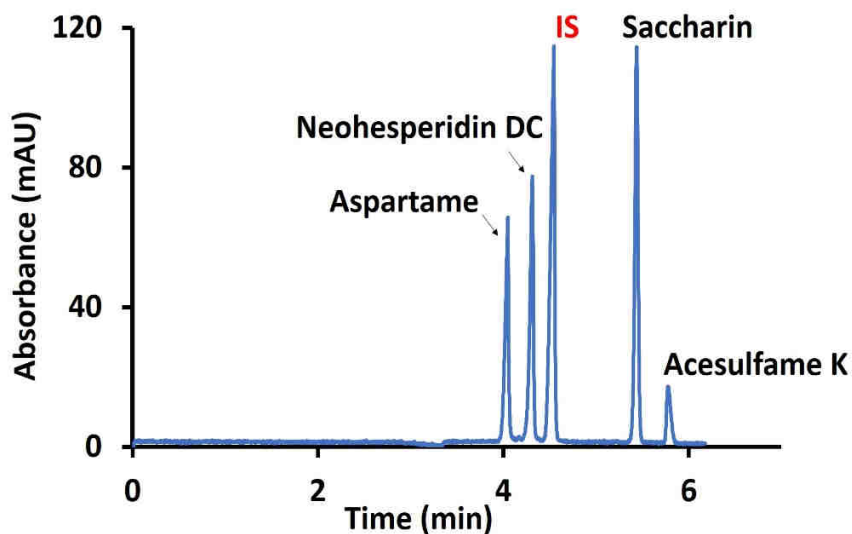
**Injection :** hydrodynamic, 50 mbar, 3 s

**Voltage :** +12 kV

**Detection :** UV direct, 208 nm

**Temperature :** 15 °C

### STANDARD SEPARATION

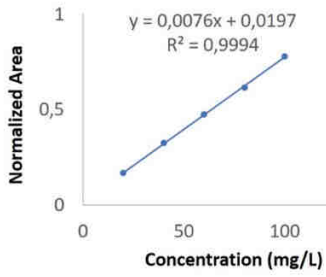


### Estimation of Limits of Detection

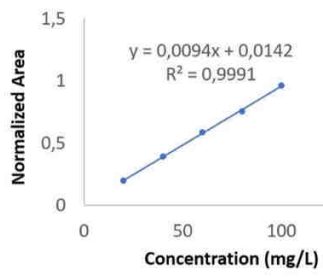
Compounds	LOD (mg/L) Calculated at S/N = 3
Aspartame	2.3
NHDC	2.1
Saccharin	0.7
Acesulfame K	7.2

**Concentration :** Aspartame, acesulfame K, NHDC at 60 mg /L ;  
Saccharin at 30 mg/L ; IS = hippuric acid at 50 mg /L

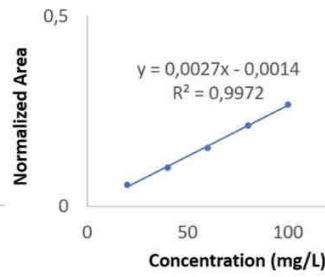
## CALIBRATION LINES



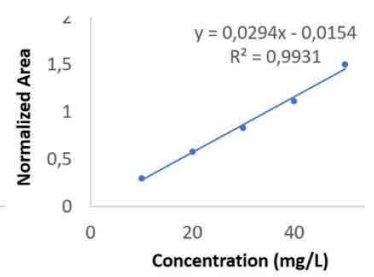
Aspartame



NHDC

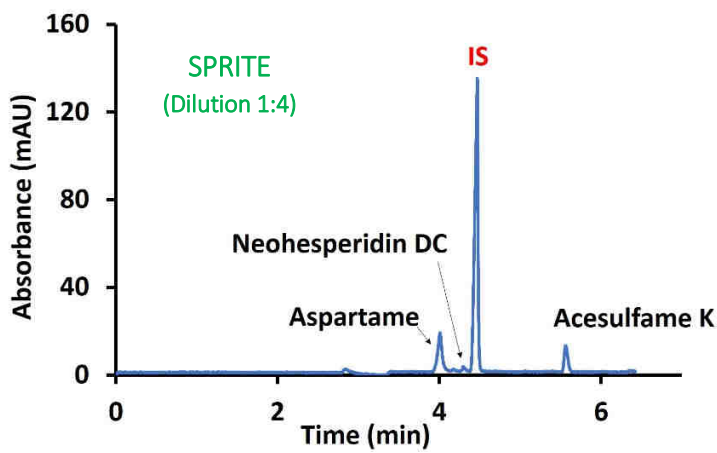


Acesulfame K

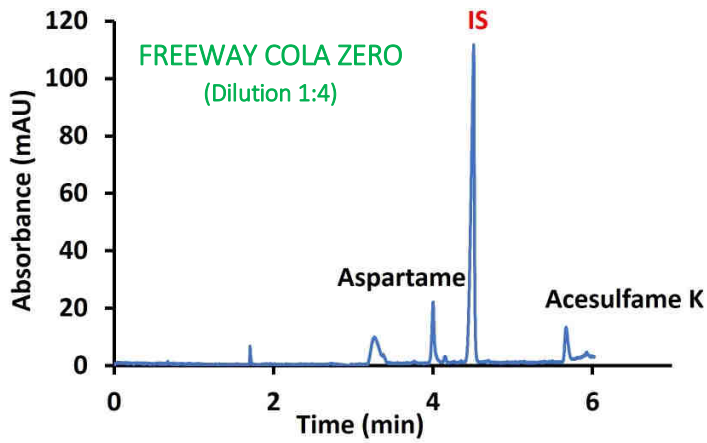


Saccharin

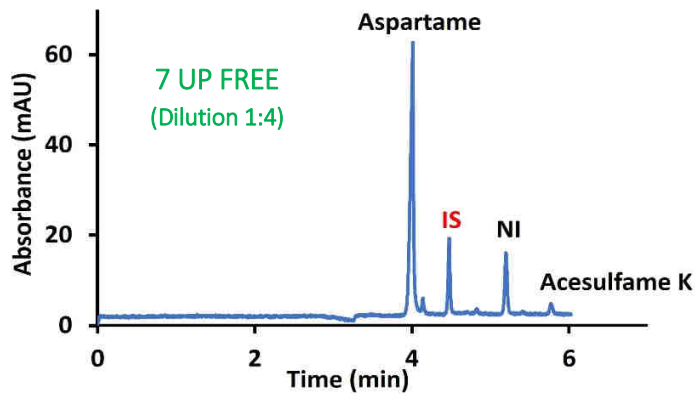
## REAL SAMPLE ANALYSES



Compounds	Concentration (mg/L)
Aspartame	100.7
NHDC	4.8
Acesulfame K	162.2



Compounds	Concentration (mg/L)
Aspartame	98.4
Acesulfame K	173.8



Compounds	Concentration (mg/L)
Aspartame	203.8
Acesulfame K	312.1