

HPLC determination of benzyl alcohol in BAC water -observed impurities

Samples:

Hospira BAC water 0.9% benzyl alcohol 30 ml, batch:NA0666, used as standard

Thor Peptides BAC water 3ml, batch: N/A

NovaLabs BAC water 10ml, batch: N/A

Figure 1. NovaLabs, Thor Peptides and Hospira BAC waters.

The samples for analysis were diluted 10x and prepared by mixing 100uL of perspective BAC water with 900 uL MilliQ water with a resistivity of 18.2 M Ω ·cm at 25 °C, a Total Organic Carbon (TOC) value of \leq 5 ppb (often \leq 2 ppb), and particulate matter < 0.22 μ m. **Water supply:** Millipore Direct-Q 5 system

Samples were analyzed using Agilent 1100 RP-HPLC, via an internally developed isocratic method.

Peaks not belonging to benzyl alcohol were observed on chromatograms at 280 nm.

Figure 2. Comparison of chromatograms at 220 and 280 nm for Hospira BAC water.

Figure 3. Comparison of chromatograms at 220 and 280 nm for NovaLabs BAC water.

Figure 4. Comparison of chromatograms at 220 and 280 nm for Thor BAC water.

Conclusion:

The peaks at approx 3.4 mins for Hospira BAC water, approx 2.75 min and 3.108 mins for Novalabs BAC water and 3.019 and 3.352 mins for Thor BAC water correspond to related impurities of benzyl alcohol.

Most likely candidates are oxidation or degradation products of benzyl alcohol and industrial contaminants such as :

Benzaldehyde- elutes after benzyl alcohol, most common oxidation byproduct of benzyl alcohol

Benzoic acid - would elute before benzyl alcohol

Benzene or toluene - non polar, would elute after benzyl alcohol and benzaldehyde, common industrial contaminants.