

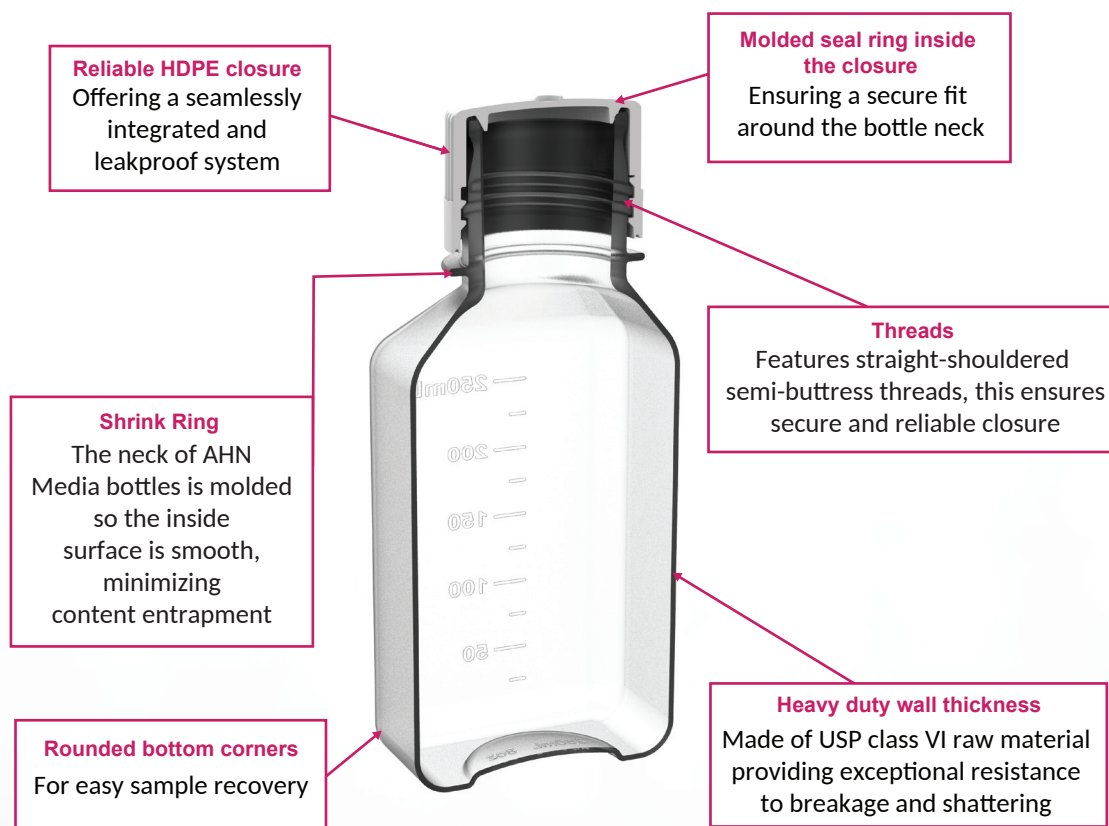


AHN Media Bottles

A complete solution for storage of media,
biological buffers & various reagents

Plastic media bottles play a crucial role across various applications, facilitating the storage of diverse cultures such as bacteria, viruses, and microorganisms, along with solutions like buffers and reagents. These bottles are indispensable for the transportation of media to and from laboratories. Recognized for their strength, lightweight construction, transparency, and user friendly features, plastic media bottles offer versatility and cost-effectiveness. Consequently, they are extensively utilized in laboratories and diverse settings for the efficient storage and transportation of media.

AHN Media bottles are leakproof PET and PETG bottles engineered with closures for optimal performance. Whether it's storage or transportation, these bottles excel in every aspect. Our routine quality inspection process ensures a seamless fit with appropriate valve seals and semi-buttress thread design, guaranteeing leakproof reliability. With a quadrangle design for efficient freezer space utilization, our bottles range from 30ml to 2L, suitable for storage up to -80°C. Made from top-tier resins meeting pharmaceutical, laboratory, and food grade standards, our manufacturing process minimizes trace element extractables, providing a superior alternative to glass.



Comparative Study on Heavy Metal Analysis of AHN Media Bottles VIS-A-VIS Competitor

Objective

To conduct analysis of heavy metal content of AHN Media bottles quantitatively against leading media bottle sellers in the world.

Introduction and Background

Bottles made of plastic resins are used to contain a wide variety of materials in many different settings. Especially in the biological and chemical fields, these materials can include high-value media, reagents, intermediates, or buffers; or critical components in sensitive assays. Some of these types of materials can be extremely sensitive to reactive compounds that may be found in the plastic, even at low concentrations. In such cases, the value of the bottle goes beyond the ability to maintain the closure seal and includes any manner in which the plastic container itself alters the contents. While plastic bottles are a generally inexpensive solution for storage of reagents or products, low-quality bottles may result in higher costs in the long run through the contamination and subsequent loss of high-value contents. Part of the quality offering on these types of containers is the verification that they do not leach detrimental substances into the solutions contained within. Metal contamination is of particular interest in plastic bottles, since they are often present at some levels in the plastic base resin and can react readily with many solutions that are normally stored in them. Here, we examined the heavy metal content of AHN PETG Media bottles with competitor PETG media bottles.

Materials and Method

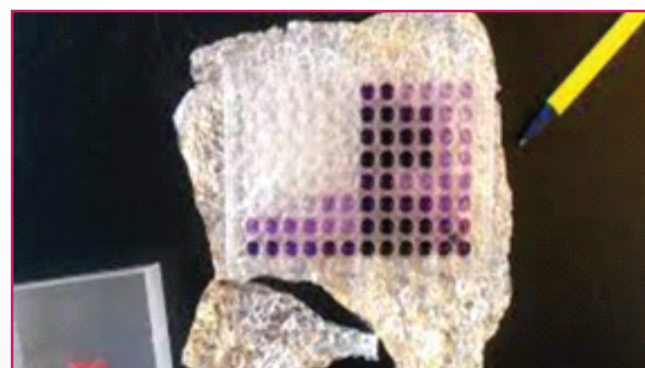
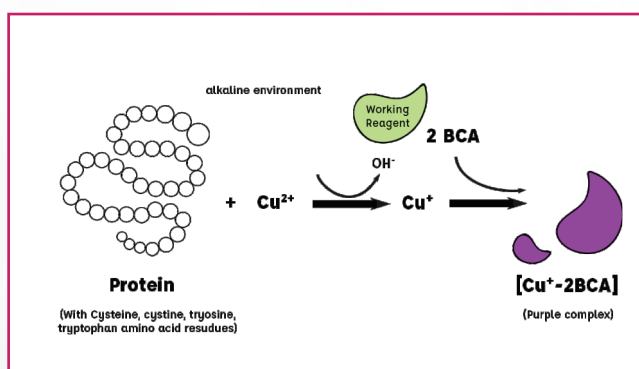
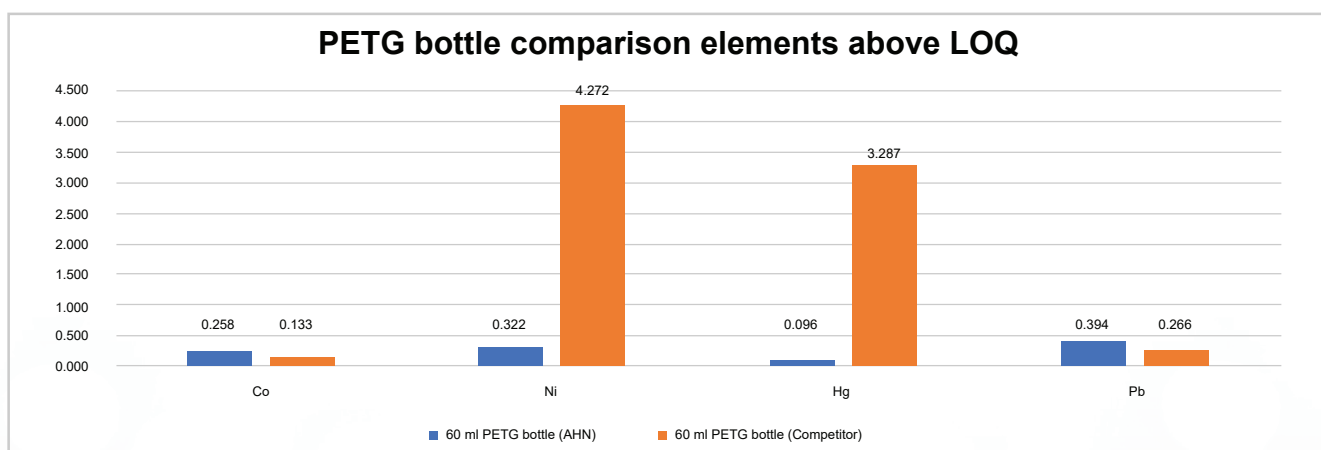
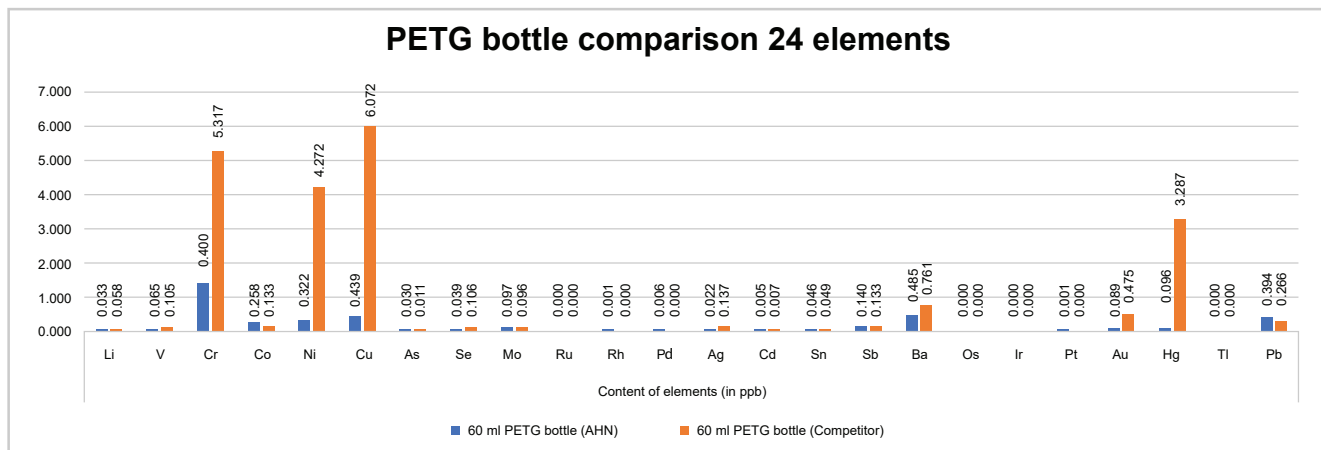
- AHN 60ml Media Bottle with Cap, PETG, sterile
- Competitor 60ml PETG Media bottle
- Thermo Scientific® iCAP RQ® ICP-MS system

Observation and Results

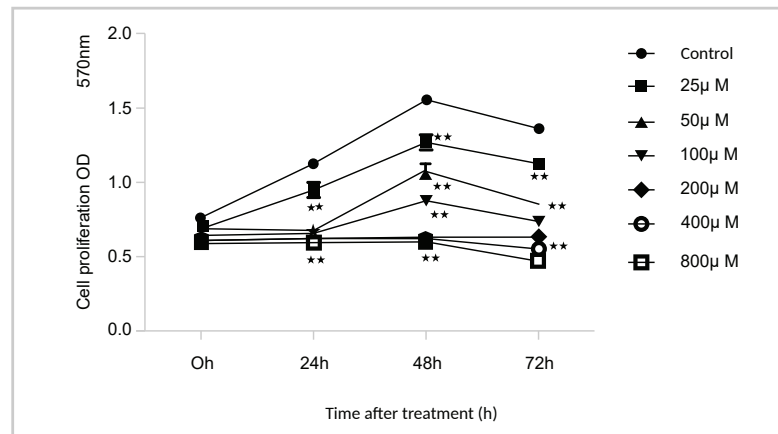
AHN Media bottles underwent a comprehensive quantitative analysis of heavy metal content compared to competitor media bottles. Through digestion and ICP-MS analysis with Media Bottle we examined 24 elements. Only Cobalt (Co), Nickel (Ni), Mercury (Hg), and Lead (Pb) were found above the threshold limit, with only 4 elements below the LOQ. Remarkably, AHN Media bottles exhibited significantly lower levels of Nickel, Mercury, and Copper compared to the competitor's bottle. Even for elements below the LOQ, AHN bottles demonstrated lower amounts of heavy metals, reinforcing their superiority over competitor products.



The BCA assay is a colorimetric method employed for protein quantification. This technique relies on the Biuret reaction, where Cu^{2+} is reduced to Cu^{+} by peptide bonds in proteins under alkaline conditions. The resulting Cu^{2+} is then detected through a chelating reaction with BCA, producing a vivid purple color (as observed in the images below). It's crucial to note that 6.072 ppb is equivalent to 6.072 $\mu\text{g/L}$, potentially leading to a false-positive concentration of protein.



Nickel ions have the potential to induce metal-based cytotoxicity in the human monocyte derived macrophage cell line THP-1. The graphs below illustrate that 25 ppb of nickel can trigger a cytotoxic reaction. Notably, 4.2 ppb of nickel was extracted from a 60ml media bottle when considering the surface area. The probability of nickel extraction is 33 ppb, posing a potential cytotoxic risk.



Conclusion

The exceptionally low levels of detectable metals underscore the superior quality of both the resin and the manufacturing process employed for AHN Media bottles.

AHN proudly provides an unparalleled selection of PETG/PET media bottles, crafted in ISO 13485:2003-certified manufacturing facilities. This diverse range caters to a broad spectrum of applications, budgets, and usage scales, ensuring best-in-class purity.

Recognizing the paramount importance of quality compliance to our customers, we extend invitations to critical application customers for on-site audits of our manufacturing facility.

References

Bradford, MM. (1976) A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. *Analytical Biochemistry*. 72, 248-254.

Zhang Y, Zhang ZW, Xie YM, Wang SS, Qiu QH, Zhou YL and Zeng GH: Toxicity of nickel ions and comprehensive analysis of nickel ion-associated gene expression profiles in THP-1 cells. *Mol Med Rep* 12: 3273-3278, 2015.

Legler G, Müller-Platz CM, Mentges-Hettkamp M, et al. (1985) On the chemical basis of the Lowry protein determination. *Analytical Biochemistry*. 150, 278-87.

