WHITEPAPER

NxGeneration of Offline Antigen Retrieval Devices

BIOCARE MEDICAL

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How Consistent Offline Antigen Retrieval Provides High Quality Staining

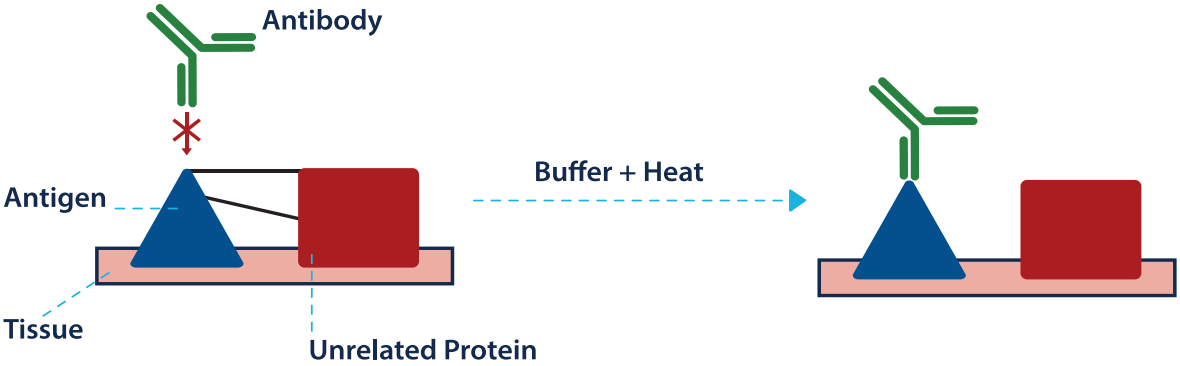
Due to its superior morphological preservation, formalin has been used as the routine fixative for tissue processing in histopathology. However, formalin is a cross-linking fixative that forms methylene bridges between proteins within the tissue[1,2]. This cross-linking alters the protein structure, causing some protein epitopes to struggle when attempting to bind complementary antibodies. One way to break the cross links and restore antigenicity is with heat-induced epitope retrieval (HIER).

There are several HIER devices on the market, including water baths, microwave ovens, steamers, and pressure cookers. Before purchasing, we must consider the critical aspects that influence antigen retrieval results:

- Does the Device have a controllable heat source and is it able to maintain temperatures at or above 100°C?[3]
- Can it Hold a Practical Volume of Slides and Retrieval Solution?[3]
- Will the Equipment Prevent Boiling and Evaporation?[3]

While most antigen retrieval devices are readily available and inexpensive, there are drawbacks to employing these house-hold grade appliances. They often times have difficulty regulating temperature, have long protocol times, and can lose power over time. Though pressure cookers have recently become very popular as they are fast and operate at higher temperatures, cookers purchased “off the shelf” still are not engineered to pass strict laboratory safety and quality control requirements.

To solve this problem, Biocare has launched the Decloaking Chamber™ NxGen as a laboratory grade device for optimal HIER. The Biocare Decloaking Chamber is designed to optimize and standardize antibody staining procedures and eliminate irregular heating and temperature variation/hot spots inherent to steamers and microwave ovens[4,5,6]. This unit offers five distinct temperature settings ranging between 60°C and 110°C with user programmable times. The 110°C antigen retrieval protocol can be completed from start to finish in under an hour. The digital control panel provides better temperature regulation and permits end users to monitor throughout the procedure. With a 72 total slide capacity and only minutes of hands-on time per run, the Biocare Decloaking Chamber NxGen truly offers a walk-away capability similar to fully automated staining instruments.



(L) Cross links between proteins within the tissue, prohibiting the antibody to bind to the antigen of interest.

(R) Cross links are broken after HIER, exposing the antigen and allowing the antibody to bind.

To learn more about the Decloaking Chamber NxGen, please contact Biocare anytime at 800-799-9499 or click the link here: https://biocare.net/product/decloaking-chamber-nxgen-antigen-retrieval/

1. Fraenkel-Conrat H, Olcott HS. J Biol Chem. 1948 Jul;174(3):827-43. 2. Fraenkel-Conrat H, Olcott HS. J Am Chem Soc. 1948 Aug;70(8):2673-84. 3. Myers, J, “Antigen retrieval: a review of commonly used methods and devices,” MLO, 2006 Jun: 10-15 4. Ramos-Vara JA, Miller MA. Vet Pathol. 2014 Jan;51(1):42-87. 5. Tacha D, Teixeira M. J Histotechnol. 2002 Dec;25(4):237-42. 6. Van Hecke D. J Histotechnol. 2002 Mar;25(1):45-54.