DNA Fragmentation Detection Kit

exalpha.com/products/dna-fragmentation-detection-kit/X2044K2

Catalog number: **X2044K1 / X2044K2**

Product Type	Immunohistochemistry Kit
Units	30 Tests / 60 Tests
Species Reactivity	Multi-species
Application	Immunohistochemistry

Background

Cell death occurs by two major mechanisms, necrosis and apoptosis. Apoptosis is also known as programmed cell death or ankoikis (a form of apoptosis which is induced by anchorage-dependent cells detaching from the surrounding extracellular matrix). Apoptosis leads to the elimination of cells without releasing harmful substances into the surrounding area. Too little or too much apoptosis plays a role in a great many diseases. When apoptosis functions inappropriately, cells that should be eliminated survive and potentially become immortal, as in cancer or leukemia. When apoptosis works overly well, too many cells may ‘die’ and the result may be grave tissue damage. This is the case in stroke and neurodegenerative disorders such as Alzheimer, Huntington and Parkinson diseases. The term ‘apoptosis’ refers only to the structural changes a cell goes through during the process of programmed cell death and not to the process itself. Classical necrotic cell death occurs due to noxious injury or trauma to the cell while apoptosis is an energy dependent mechanism that takes place during normal cell development. While necrotic cell death results in cell lysis, cellular apoptosis is characterized morphologically by cell shrinkage, nuclear pyknosis, chromatin condensation, and blebbing of the plasma membrane. Apoptosis is the result of a cascade of molecular and biochemical events involving endogenous endonucleases that cleave DNA into the prototypical ‘ladder of DNA fragments’ that may be visualized in agarose gels. Observation of oligonucleosomal DNA fragments by DNA laddering has long been the most acceptable and only available assay for the detection of apoptosis. Exalpha’s DNA Fragmentation Detection Kit exploits the fact that apoptotic endonucleases not only affect cellular DNA by producing the classical DNA ladder but also generate free 3’-OH groups at the ends of these DNA fragments. These free 3’-OH groups are end-labeled by the DNA Fragmentation Detection Kit allowing for the detection of apoptotic cells using a molecular biology-based, end labeling technique.

Applications

Optimal concentration should be evaluated by serial dilutions.

Storage
Exalpha's DNA Fragmentation Detection Kit components are shipped on cold pack. Upon receipt, store kit at -20°C in a non-frost-free freezer. For long term storage, it is recommended that you aliquot and freeze the Proteinase K (Component 1), the TdT Enzyme (Component 4), TdT Labeling Reaction Mix (Component 3) and 25x Streptavidin-HRP Conjugate (Component 7) at -20 °C. Thirty (30) minutes prior to use of each component, thaw component and keep on cold block or on ice. Return the components to -20°C for long term storage or 4-8ºC for short term storage (up to 2 weeks) immediately after use. Special care should be taken to keep TdT Enzyme (Component 4), TdT Labeling Reaction Mix (Component 3) and 25x Streptavidin-HRP Conjugate (Component 7) cold by pulling out the number of aliquots needed for the test, keeping them on ice, and leaving the remaining aliquots at -20°C.

Caution
This product is intended FOR RESEARCH USE ONLY, and FOR TESTS IN VITRO, not for use in diagnostic or therapeutic procedures involving humans or animals. It may contain hazardous ingredients. Please refer to the Safety Data Sheets (SDS) for additional information and proper handling procedures. Dispose product remainders according to local regulations.This datasheet is as accurate as reasonably achievable, but Exalpha Biologicals accepts no liability for any inaccuracies or omissions in this information.

Safety Datasheet(s) for this product:
EA_X2044K SDS_V1

Kit Manual
Click here to download the Kit Manual

Figure 2. DNA Fragmentation Detection Kit (X2044K) using paraffin fixed human tonsil tissue, 10 µm sections (1000X). [A] Section processed and counter-stained with methyl green according to the DNA Fragmentation Detection Kit manual. [B] Counter-stain step was eliminated to more clearly illustrate the level of positive staining in the germinal centers of tonsil tissue. [C] Section treated with DNase I in order to generate a positive control slide. Note all nuclei stain positive. The use of DNase I generates free 3'-OH groups on cellular DNA, these free 3'-OH groups are then labeled with biotin-nucleotide by the TdT in the DNA Fragmentation Detection Kit (X2044K). [D] Negative control, where the TdT enzyme step was eliminated, thereby generating a negative slide.