

SOP – 17/ST/TR/PF – 2017

The applications of AQIX® RS-I solution have been successfully trialed for;
a) Procurement and Storage/Transportation of liquid and solid biopsy samples,
b) Normothermic Perfusion of animal and human Tissue/Organ preparations

Preamble:

It is important to note that AQIX® RS-I, is a **NON** phosphate pH buffered solution. Therefore, for *in vitro* experimentation, the dilution, preparation, and utilisation processes are different to those used with conventional pH phosphate-buffered saline solutions.

The following information is intended to assist the operator to maximize the performance of AQIX® RS-I solution for the storage/transportation and normothermic perfusion of isolated animal and human cadaver biopsied tissues/organs utilised in proteomic, pathological, physiological and pharmacological research. Good laboratory practice must be adhered to throughout the complete process.

1. Storage of AQIX® RS-I ('Ready-to-Use') solution

Ready-to-use (1x) solutions of AQIX® RS-I have a pH of 7.25 ± 0.05 @ RTP and can be stored at 3 - 8 °C in suitable sealed, borosilicate glass bottles or plastic PETG containers for periods of up to **8 - 15 months** without any change in pH or precipitation of calcium or magnesium salts.

Ready-to-Use (1x) solutions of **carbogenated**, AQIX® RS-I solutions are prepared under sterile conditions and can be kept for up to **8 - 15 months** when stored in suitable, sealed containers (e.g., borosilicate glass bottles /Nalgene® bottles) at 3 - 8 °C.

Storage of non-aerated or aerated (**carbogenated**) AQIX® RS-I solution for periods more than **8 - 15 months** will depend upon the addition of suitable antibiotic (e.g., chloromycetin [100mg/L; nanomycopulitin [50mL/L] and antifungal agents (amphotericin B (5-10 mg/L).

2. Procedures for the Storage/Transportation of Organ/Cell/Tissue Biopsy Samples

2.1 Hypothermic [3 – 10 °C] Procedure:

Organ Segments;

a) Segments [0.5 – 5.0 cm] of cadaver organs (e.g., lobes/bronchi of lung, liver; kidney; heart; colon; intestine; skin) should be flushed with 'cold' [3 - 10 °C], 'Ready-to-Use' AQIX® RS-I (previously aerated for 10-15 minutes with **carbogen** gas [95%O₂ / 5%CO₂]) to remove any residual blood and cell debris.

b) The procured organ/tissue segments are then totally immersed in 'cold' [3 - 10 °C] AQIX® RS-I solution within a suitable, sealed container (e.g., Nalgene® bottle) during transportation in a polystyrene, outer container over 'wet' ice [0 - 4 °C].

2.2 Mild-Hypothermic [RTP: 15 – 25 °C] Procedure:

a) Organ segment biopsies should be rinsed thoroughly with AQIX® RS-I solution at ambient temperatures conditions and then placed into a suitable, sealed container (e.g., Nalgene® bottle)

containing carbogenated AQIX® RS-I solution for transportation under ambient temperature conditions [15 – 25 °C].

b) Transportation times of 24 – 72 hours are permissible if storage/transportation temperatures of < 25 °C are maintained throughout this procedure.

3. Normothermic re-animation of Tissue Biopsy Samples using AQIX® RS-I solution

Biopsy tissue preparations previously stored and transported in AQIX® RS-I (**1x**) solution are re-animated in 5-20mL organ bath chambers under normothermic conditions using **AQIX® RS-I (1x)** solution. A perfusion rate of 1 – 4 ml/minute at 32 – 37 °C is recommended. Resumption of functional activity of the biopsied preparations occurs within 15 – 30 minutes of normothermic perfusion.

Important information

In comparing AQIX® RS-I to other perfusate solutions it is important to note that the majority of conventional perfusion solutions utilise inorganic phosphate ions as a pH buffering agent. Although there may be some apparent short-term benefit, the presence of inorganic phosphate ions has been reported to cause deleterious and irreversible alterations in cell structure and numerous biochemical processes over time.

One of the unique, patented features of AQIX® RS-I solution is the absence of inorganic phosphate ions and to use instead, the natural pH buffering mechanism, namely, the P_{CO_2}/HCO_3^- , operating in all mammalian/human species. It is therefore vital to ensure that in any comparative tests no trace contamination of phosphate ions exists by replacing all containers, line-feeds and other apparatus when changing to the AQIX® RS-I perfusate formulation.

For further information on this biopreservation and perfusion AQIX® RS-I solution products refer to reports/publications section at www.aqix.com or contact:

Aqix Ltd

London Bioscience Innovation Centre

London, NW1 0NH, UK

Technical: doug@aqix.com

Orders: sales@lifesciencegroup.com

DD-Tel: +44 7 929 460 267