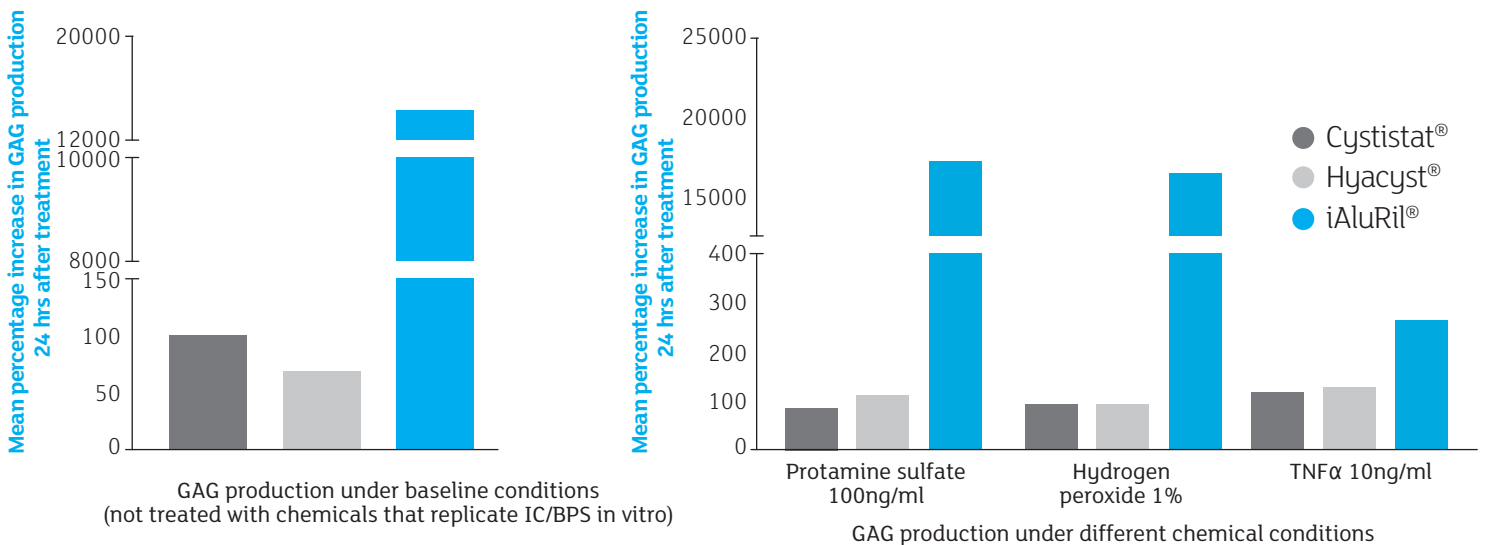


Lab studies and models are used throughout science to investigate the principles of how products work *in vitro* (in test-tubes). Such studies are an important place to start in order to confirm effectiveness and safety; and therefore the overall effect the product has. Once the method of action has been thoroughly tested and explored in labs, research moves into testing the product's effectiveness in clinical trials with patients in real-world settings. Here, they can be used to directly measure the clinical outcomes in specific diseases.

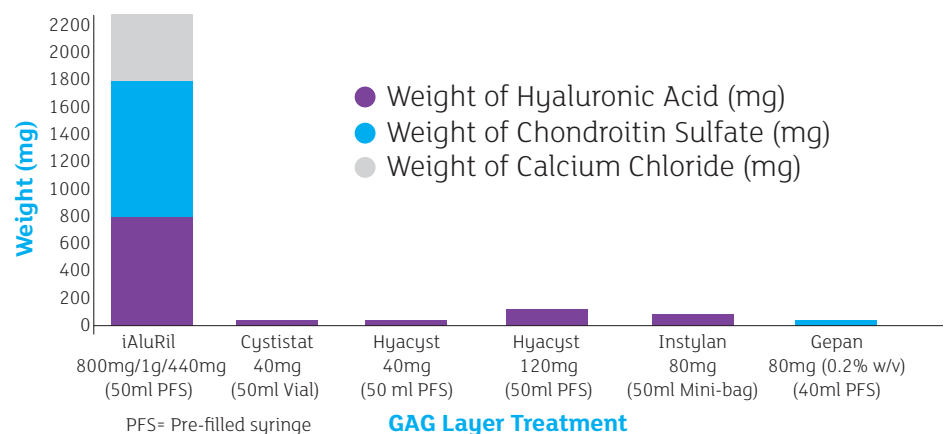
It is well known that glycosaminoglycans (GAGs) are important in the treatment of interstitial cystitis (IC)/bladder pain syndrome (BPS) and recurrent UTIs (rUTIs), and GAGs are the basis of many bladder instillation treatments to manage and treat these conditions effectively. GAGs such as sodium hyaluronate (HA) and chondroitin sulfate (CS) form part of the natural GAG layer of the bladder; the protective coating which becomes damaged in IC/BPS and rUTIs, leading to debilitating symptoms. When HA and CS are instilled directly into the bladder they effectively replenish the GAG layer; re-forming its waterproof nature, thus improving symptoms of pain, and urgency and frequency of urination.

In addition to the knowledge that these products effectively replenish the GAG layer, a study by **Rooney. P. et al (2020)**¹ shows that introducing external GAGs to the bladder potentially leads to increased production of GAG components by the body; further displaying their effectiveness in treating and managing IC/BPS and rUTIs.

In this study, human bladder cells were chemically stimulated *in vitro* to mimic the conditions that occur in IC/BPS and the effects of three GAG treatments (iAluRil®, Hyacyst® and Cystistat®) were compared. Among the different conditions screened the results showed that, compared to the other products, iAluRil® with its high concentrations of both HA and CS, was most effective at stimulating the body's own GAG production; increasing it by up to 15-fold.

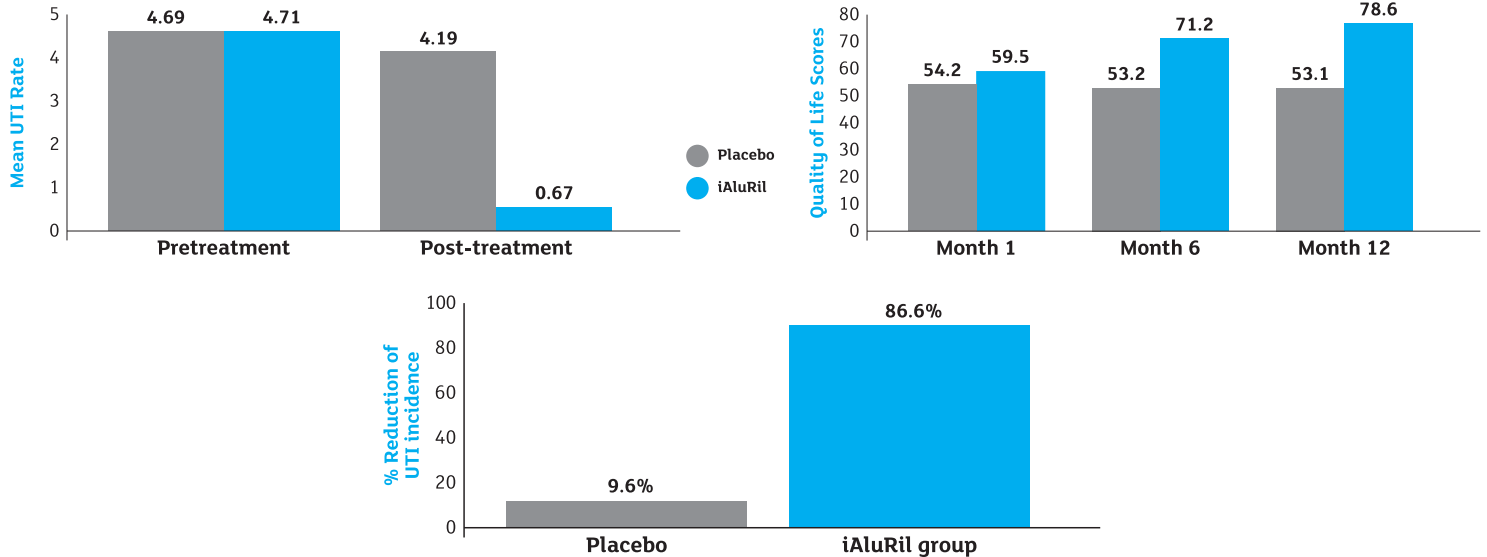


When these results are read in-line with the compositions of each treatment, it would seem logical that iAluRil®, with its high component concentrations, was found to be superior in stimulating the natural production of GAGs in human cells in the lab. This result can be used to help explain the beneficial results seen in the real world; in patients using iAluRil® to treat and manage IC/BPS.



An influential study was conducted by **Damiano, R. et al (2011)**² referenced in European Association of Urology (EAU) guidelines. Its aim was to investigate how effective and well-tolerated bladder administration of iAluRil[®] was in female patients suffering from rUTIs. In this randomised trial, patients were either given bladder instillations of iAluRil[®] or a placebo and were followed up for 12 months to measure UTI incidence, symptoms and quality of life.

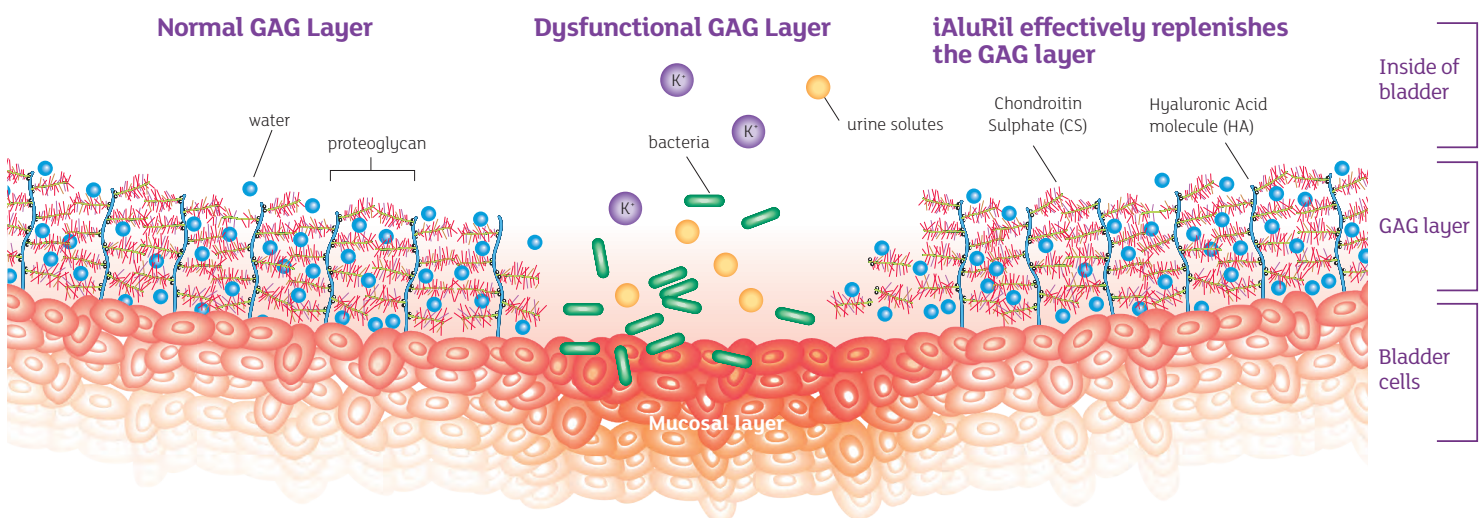
Compared to placebo, instillations of iAluRil[®] resulted in a significantly reduced incidence of UTIs throughout the year-long study, and symptoms of pelvic pain and urgency and frequency of urination were significantly improved. Quality of life was considerably higher in the iAluRil[®] group, with improvements seen as early as month 1.



The results of this lab-based and in-patient study, analysed together, help to explain the efficient, effective nature of iAluRil[®] and its logical use in the treatment and management of IC/BPS and rUTIs.

iAluRil[®] with iAluadapter[®] Combination GAG Therapy

Restoring a Healthy Bladder



Visit www.iAluRil.co.uk for more information

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard
Adverse events should also be reported to Aspire Pharma Ltd. (Tel: 01730 231148)

1. Rooney, P et al. Effect of Glycosaminoglycan Replacement on Markers of Interstitial Cystitis In Vitro. *Frontiers in Pharmacology* (2020) 11:575043.
2. Damiano, R. et al. Prevention of Recurrent Urinary Tract infections by Intravesical Administration of Hyaluronic Acid and Chondroitin Sulphate: A Placebo-Controlled Randomised Trial. *European Urology* 59 (2011) 645-651.