New Therapeutics for Autoimmune and Inflammatory Diseases

Safer RNA Vaccines and Therapeutics

Noxopharm Ltd (ASX:NOX) is an innovative Australian biotech company discovering and developing novel proprietary anti-inflammatory technologies and cancer treatments. Led by a highly experienced management team, its Sofra™ platform represents a pioneering approach to optimize mRNA vaccines and treat autoimmune and inflammatory diseases.

Blocking Inflammation at its Source

The Noxopharm Sofra™ technology platform is based on ultra-short oligonucleotides with diverse potential applications in the modulation of inflammation.

Noxopharm and its subsidiary Pharmorage, in strategic collaboration with the Hudson Institute of Medical Research, have developed several preclinical 3-base oligonucleotides (3-mers) that have displayed highly potent and selective reduction of inflammation through binding to Toll-like receptors 7 and 8 (TLR7 and TLR8).

Aberrant TLR7 activity has long been implicated in the aetiology of systemic autoimmunity, and a recent study published in Nature has now definitively linked TLR7 with human lupus.[1]

The company is currently developing these oligonucleotides as a promising new class of therapeutics for autoimmune diseases such as lupus and psoriasis that involve overactivation of TLR7. Unlike most anti-inflammatory drugs that target the end-stages of the inflammatory process, Noxopharm's oligonucleotides act by blocking inflammation at its source.

Unique Solution for a Global Market

There are currently no approved therapeutic inhibitors of TLR7 on the market, making this a unique solution for an urgent unmet need.

Autoimmune diseases can affect almost any organ in the body, including the brain, and in most cases more than one organ or organ system. This group of diseases often involves inflammation, with symptoms such as joint stiffness, pain, loss of function, and rashes, with periods of remission and periods of increased disease activity.

Estimates of the number of individuals suffering from autoimmune diseases in the US alone range from 14 to 24 million cases. The global immunology market is projected to grow from USD 92 billion in 2021 to USD 158 billion in 2028.

Hudson Institute of Medical Research and Pharmorage have recently been supported with AU$3 million in government grants. Noxopharm is also actively investigating the potential for its Sofra™ oligonucleotides to limit the inflammatory side effects associated with mRNA therapeutics and vaccines via the company's proprietary SOF-VAC™ vaccine enhancer.

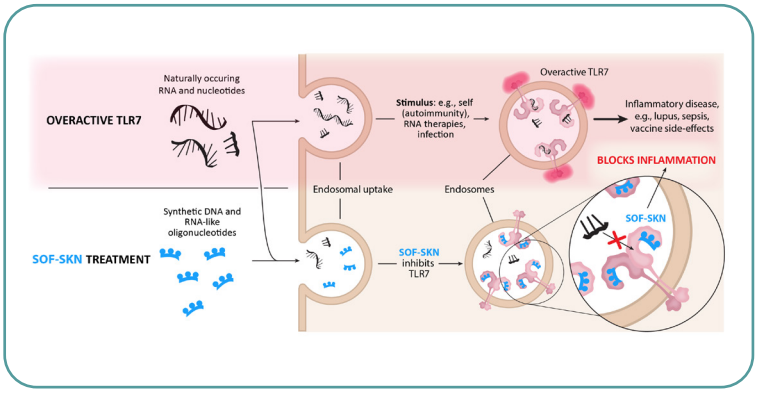

Figure 1. Representation of the effect of SOF-SKN on TLR7

Study Results

A recent study[2] demonstrated that topical application of Noxopharm's drug candidate SOF-SKN supresses inflammation and ameliorates disease in a mouse model of psoriasis-like inflammatory skin disease triggered by TLR7 activation.

SOF-SKN was applied topically to the back and ear of mice once daily, followed immediately by application of Aldara cream containing the TLR7 agonist imiquimod to induce skin inflammation. Mice were scored daily for the appearance and severity of skin inflammation and, at the conclusion of the experiment, inflammatory gene signatures in the skin were analysed.

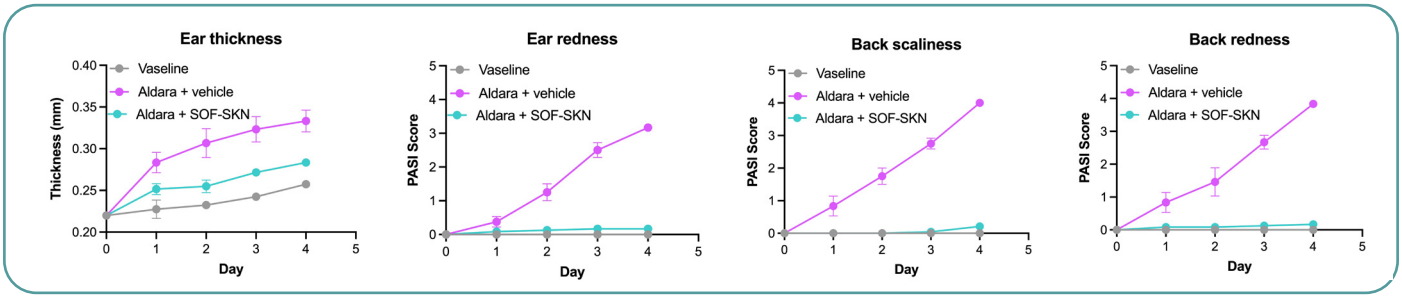

Figure 2: Scoring of inflammation in the Aldara-induced psoriasis model using the psoriasis area and severity index (PASI) ranging from 0 (normal) to 5 (marked, >50% total area). A, Ear thickness (mm). B, Ear redness. C, Back scaliness. D, Back redness.

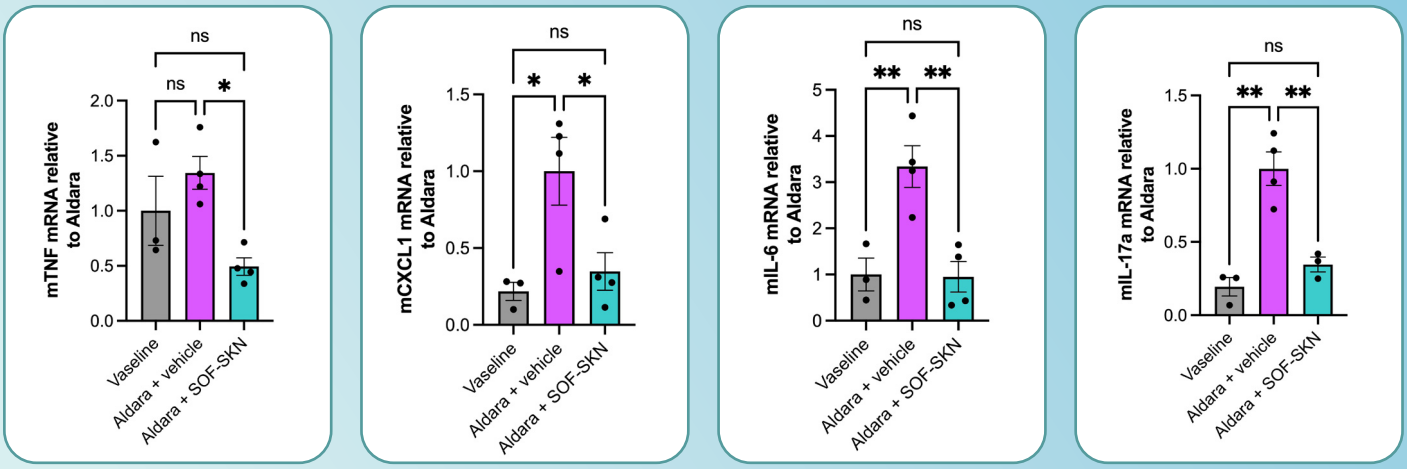

Figure 3: Analysis of inflammatory genes in the back skin of mice in the Aldara-induced skin inflammation model.

SOF-SKN greatly reduced the severity of skin disease in a model of autoimmunity, reducing redness, scaling, and dermal thickening, and there was a significant reduction of inflammatory genes in the skin, indicating that TLR7 in the skin has been 'switched off'.

SOF-SKN represents a promising new class of therapeutics for the treatment of TLR7-driven inflammation.

REFERENCES

1. www.nature.com/articles/s41586-022-04642-z
2. lupus.bmj.com/content/10/Suppl_1/A37.3

Suite 71, 159 Ridgecrop Drive,
Castle Hill, NSW 2154, Australia

Investor, Corporate & Media enquiries:
info@noxopharm.com

www.noxopharm.com

@Noxopharm Limited

@noxopharm