

New research could signal progress in osteoarthritis pain relief

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Researchers from the Arthritis Research UK Pain Centre at The University of Nottingham have discovered a new way to potentially block the chronic and often debilitating pain affecting osteoarthritis sufferers.

Currently, people experiencing the [severe pain](#) associated with OA are offered pain relieving drugs such as steroid injections and non-steroidal anti-inflammatory drugs, which work by reducing inflammation. However, some of these drugs can be associated with severe side-effects that limit their use.

In a new study published by the journal *Annals of the Rheumatic Diseases* and highlighted by *Nature Reviews Rheumatology* scientists studied a protein ('receptor') called TRPV1, which is produced by nerve cells in the human body that are responsive to pain, including those that respond to stimulation of joints.

Blocking pain

Dr Sara Kelly, a lecturer in neuroscience at the University, and one of the lead researchers on the project, says that previous research has suggested that TRPV1 could be an important contributor to [osteoarthritis](#) pain and that drugs that 'block' TRPV1 (TRPV1 antagonists) have the potential to reduce it.

"The success of recent clinical trials in osteoarthritis patients of TRPV1 antagonists has been hampered by adverse effects on body temperature resulting in hyperthermia (or overheating of the body)," explained Dr Kelly.

"Using a model of human osteoarthritis pain we wanted to investigate if by blocking these receptors locally within the diseased joint, could we reduce the pain caused by osteoarthritis, without the side effect of hyperthermia—and the answer is—yes.

"Osteoarthritis is a very common disease and the pain it causes is severe and can last a life time. A lot of patients who suffer with osteoarthritis are elderly and it would be better if we could treat their pain by giving them a drug, rather than putting them through a major surgical procedure like a joint replacement. The annual cost of joint replacement to the NHS is close to £200 million, which is another reason to look for a more effective solution."

Reversing the pain

So by blocking TRPV1 within the joint, Dr Kelly and the pain centre research team were able to reverse the pain responses in the osteoarthritis pain model.

"By targeting the joint directly, we did not see the side effect of hyperthermia, which is thought to be generated outside of the joint at the level of abdominal organs," added Dr Kelly.

This latest discovery suggests that injecting TRPV1 antagonists directly into the diseased joint could potentially maximise the effectiveness of the [pain relief](#) without producing undesirable side effects. This approach will potentially be used to help treat the pain caused by osteoarthritis in the future. However, the effectiveness of TRPV1 antagonists in reducing

osteoarthritis pain following locally delivery to the joint needs to be tested in clinical trials in patients first.

Growing epidemic

In this country alone, osteoarthritis affects over eight million people, and with an aging population combined with the growing obesity epidemic, this figure is set to rise.

Professor Alan Silman, medical director of Arthritis Research UK, which funded the research, said: "We desperately need new approaches to treating the pain of osteoarthritis. For some years this particular pathway has shown potential as a means by which osteoarthritic pain may be transmitted, but until now attempts at blocking this pathway have caused unacceptable side-effects.

"This research seems to suggest it might be possible to overcome this and to provide a novel and effective approach to targeting osteoarthritis."

Dr Kelly added: "Osteoarthritis is more common in individuals 65 years of age and over, but younger people can have it too. The pain of osteoarthritis can have a severe impact on daily life activities, so improved pain relieving treatments could have a huge impact on the quality of life of millions of people."

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