Curry spice could offer treatment hope for tendinitis

August 9 2011

(PhysOrg.com) -- A derivative of a common culinary spice found in Indian curries could offer a new treatment hope for sufferers of the painful condition tendinitis, an international team of researchers has shown.

In a paper due to be published in the *Journal of Biological Chemistry*, the researchers at The University of Nottingham and Ludwig Maximilians University in Munich have shown that curcumin, which also gives the spice turmeric its trademark bright yellow colouring, can be used to suppress biological mechanisms that spark inflammation in tendon diseases.

Dr Ali Mobasheri of the University's School of Veterinary Medicine and Science, who co-led the research, said: "Our research is not suggesting that curry, turmeric or curcumin are cures for inflammatory conditions such as tendinitis and arthritis. "However, we believe that it could offer scientists an important new lead in the treatment of these painful conditions through nutrition. Further research into curcumin, and chemically-modified versions of it, should be the subject of future investigations and complementary therapies aimed at reducing the use of non-steroidal anti-inflammatory drugs, the only drugs currently available for the treatment of tendinitis and various forms of arthritis."

Tendons, the tough cords of fibrous connective tissue that join muscles to bones, are essential for movement because they transfer the force of muscle contraction to bones. However, they are prone to injury,

particularly in athletes who may overstretch themselves and overuse their joints. Tendinitis (or tendonitis) is a form of tendon inflammation, which causes pain and tenderness near to joints and is particularly common in shoulders, elbows, knees, hips, heels or wrists. Other examples of common tendon disease include tennis and golfer's elbow and Achilles tendinitis.

The global incidence of tendinitis is on the increase in line with the rise in ageing and inflammatory diseases. It is also linked to other arthritic and rheumatic diseases such as rheumatoid arthritis or metabolic diseases such as diabetes.

The only treatment is to relieve pain and reduce inflammation and the only medicines which are effective in treating tendinitis are non-steroidal anti-inflammatory drugs (NSAIDS), such as aspirin or ibuprofen. In more serious cases of tendon injury, steroid injections can be given directly into the tendon sheath to control pain and enable physical therapy to start.

However, NSAIDS and steroids are associated with undesired side effects including stomach ulcers, nausea, vomiting, heartburn, headache, diarrhoea, constipation, drowsiness and fatigue. Consequently, there is an acute need for new treatments with fewer debilitating side effects.

This latest research centres on curcumin, a key ingredient of the spice turmeric, which has been used for centuries in traditional Indian or 'Ayurvedic' medicine as an anti-inflammatory agent and remedy for symptoms related to irritable bowel syndrome and other disorders.

More recently, studies have linked curcumin to potential uses in treating arthritis and a range of rheumatic diseases and, potentially, even as an agent to kill cancer cells directly or make them more sensitive to killing by chemotherapy and radiotherapy.

The Nottingham-Munich study used a culture model of human tendon inflammation to study the anti-inflammatory effects of curcumin on tendon cells. The main objective of the study was to observe the effects that curcumin had on the inflammatory and degenerative properties induced by signalling molecules called interleukins. Interleukins are a type of small cell-signalling protein molecules called cytokines that can activate a whole series of inflammatory genes by triggering a dangerous 'switch' called NF-kB.

The results showed that introducing curcumin in the culture system inhibits NF-kB and prevents it from switching on and promoting further inflammation.

The results follow on from another study by the Nottingham-Munich collaboration, published in the Journal of Biological Chemistry earlier this year, demonstrating that a compound found in red wine could have therapeutic potential for osteoporosis related bone loss in elderly patients, post-menopausal women and patients with rheumatoid arthritis.

The research found that resveratrol, a naturally occurring phytoestrogen found in the skin of red grapes, vines and various other fruits and nuts, inhibits inflammation in bone cells. Its effects extended to inhibiting the formation of osteoclasts, giant congregations of blood-derived cells responsible for bone degeneration, especially in osteoporosis in later life. Resveratrol prevented NF-kB from switching on to trigger inflammation.

The results suggest that resveratrol plays a pivotal role in regulating the balance between the formation of new bone and bone loss, which can lead to weak or brittle bones.

The findings are an important step in the search for new drugs to treat conditions such as osteoporosis, which are currently treated using medications including calcium and vitamin D supplements and a class of

drugs known as bisphosphonates. Post-menopausal women can also benefit from hormone replacement therapy (HRT), however, it is associated with a large number of side-effects ranging from headaches to behavioural changes and acne and long-term use can increase the risk of developing uterine cancer.

Provided by University of Nottingham