Word count: 466

Date: May 20, 2011 Friday

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**DAILY MAIL (London)**

THE SURGERY-FREE SOLUTION TO YOUR BAD BACK ... A **JAB** OF GEL  
  
**BYLINE:** BY FIONA MACRAE SCIENCE CORRESPONDENT

A **JAB** that could ease the misery of **back pain** for millions has been invented by British scientists.

The injection contains thousands of microscopic sponge-like particles that inflate and gel together inside the body, repairing damaged and worn-away spinal discs.

Almost everyone over 50 has degeneration of the intervertebral discs, which cushion the vertebrae that make up the various sections of the spine.

Eighty per cent of Britons suffer **back pain** at some point in their lives. The most badly damaged discs are treated through surgery, in a major operation in which vertebrae are fused together, and patients can take months to recover.

In contrast, it is hoped that patients would be back to normal just days or weeks after a **jab** of the gel.

The injection, which is the result of 25 years of work at Manchester University, contains billions of tiny particles which form a liquid in the syringe. Once inside the body, they turn into a gel. Lead researcher Dr Brian Saunders, of the university's School of Materials, said: 'It is made up of lots of really, really small microgel particles, sponge-like particles, each about one-thousandth the width of a human hair, floating around in water.

'When we inject them, they expand and push against each other like a boxful of balloons blowing up and pushing against each other.'

As a result, they lock together, creating a strong, load-bearing material, the journal Soft Matter reports.

Dr Saunders said: 'By the time we get to 50 years old, 97 per cent of us have degeneration in some of our intervertebral discs and it gets progressively worse. It causes a lot of time off work and is a major issue because as a society we are all getting older and heavier.

'Treatments go from simple ones like physiotherapy to very severe ones like spinal fusion.

'That's a major operation which involves lots of time in hospital and lots of time recovering and there's not really that much in between, so for years we've been working on an injectable approach that doesn't involve surgery.

'We hope it could be done in the out-patients part of a hospital, rather than going into a surgical theatre and you'd be in and out, rather than spending days in hospital.'

The gel is likely to be injected into people for the first time in around five years. If all goes well, it could be widely used to ease **back pain** three years after that.

Professor Tony Freemont, a co-author of the paper, said: 'Degeneration of intervertebral discs results in chronic **back pain** which costs the country billions of pounds per annum and causes untold misery for sufferers and their families.'

Back ache is one of the biggest causes of absenteeism Ð accounting for nearly five million lost working days a year.

**The Mirror**

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Sentences: 22

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BACK TO NORMAL;   
FLUID **JAB** IN SPINE CURES DISC PAIN  
  
**BYLINE:** MIKE SWAIN

A SIMPLE new injection could cure crippling **back pain** caused by worn out discs.

Scientists have developed a liquid that turns into a durable gel in the spine to support damaged areas.

It is hoped the **jabs** will mean the end of gruelling surgery for those who suffer chronic **back pain**.

But doctors could also use the gel on those displaying the first signs of worn discs in a bid to stop the problem getting worse.

The fluid was developed by experts at University of Manchester School of Materials.

Lead researcher Dr Brian Saunders said: "We have got a fluid which changes to a load-supporting gel. It can change in about seven minutes at body temperature.

"Currently treatment for **back pain** is severe. If you have severe degeneration of your back it requires spinal fusion which is a major operation and requires a lot of hospital time and recovery.

"The beauty of a fluid is that it occupies a space and then sets. But it is a gel so it contains a lot of water and can contract and re-expand."

The gel has been tested on cows' tails which are similar to a human spine. Dr Saunders is confident it could be trialled on patients in around five years. Scientists have been working on the spinal gel for 25 years, struggling to make it stable enough to act as a permanent replacement for discs. But the Manchester team got the vital breakthrough when they succeeded in making it elastic but durable so it won't break.

Dr Saunders added: "We have these voids in our spines which get larger with time. That's why we get shorter as we get older. The breakthrough was making the gel stable. We had to get past that last hurdle, but it will still take time."

Around eight out of 10 people suffer from **back pain** at some time. It is a major cause of lost work days and is second only to headaches as a common ailment.

**Telegraph**

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**New gel could solve back pain, scientists say**

British scientists have invented a jab that could ease chronic back pain for millions of sufferers.

It is estimated that back pain affects 80 per cent of people at some point in their lives. In the United States it is the most common cause of job-related disability, a leading contributor to people missing work.

Now, University of Manchester scientists have developed a gel which repairs damaged spinal discs.

Writing in the journal Soft Matter, they say they have discovered how to permanently replace the workings of the invertebral disc.

The answer is microscopic spongelike particles which inflate and gel together to repair worn-away discs.

Lead researcher Dr Brian Saunders, of the School of Materials, and his team have succeeded in linking the microgel particles together to form injectable durable, elastic gels capable of sustaining large permanent changes in shape without breaking.

The injection, which is the result of 25 years of work, contains billions of tiny particles which form a liquid in the syringe. Once inside the body they turn into a gel.

Dr Saunders said: “Our team has made a breakthrough through innovative materials design that brings the prospect of an injectable gel for treating degeneration of the intervertebral disc a step closer.

Professor Tony Freemont, Head of Research in the School of Biomedicine, and co-author on the paper, added:

“Degeneration of the intervertebral disc results in chronic back pain which costs the country billions of pounds per annum and causes untold misery for sufferers and their families.

“We have been working for 25 years to identify methods for treating degeneration of the intervertebral disc.”

**The Express**

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GEL TO WIPE OUT THE MISERY OF BACK PAIN FOR MILLIONS

**A SMALL squeeze of gel could offer a rapid solution to agonising back pain for millions of sufferers.**

British scientists say they have created a special “swellable” gel which can fill holes in damaged spinal discs that trigger aches and pains.

Just a squirt could be enough to ease years of pain and bring a smile back to the faces of the one in three afflicted adults, they say.

And after 25 years of hard work, the University of Manchester team believes their new recipe is ready to test on animals and humans.

According to the scientists, the answer lies in tiny particles that are submerged into the gel. Once injected into the spine they will swell to fit the space left by natural damage.

Back pain costs the UK economy more than £5billion a year and leads to 4.9 million days off work.

After stress, it is the leading cause of long-term work-related absence.

A recent study found that one in every 10 people reported having chronic back pain. Although the condition is common, few breakthroughs have been made in its treatment.

Patients either have to opt for physiotherapy exercises, posture exercises, acupuncture or, in more extreme cases, surgery.

Professor Tony Freemont, head of research at the ­University of Manchester’s School of Biomedicine, helped to develop the new gel. He said: “Degeneration of the intervertebral disc results in chronic back pain which costs the country billions of pounds per annum and causes untold misery for ­sufferers and their families.

“We have been working for 25 years to identify methods for treating degeneration of the intervertebral disc.”Top of FormBottom of Form

The results, published in the journal Soft Matter, suggest the new form of gel should be more durable than previous creations.

Back pain forces 2.6 million people to visit their GP every year.

Most manage to recover within six weeks.

But an estimated seven per cent go on to suffer a chronic form of the condition, badly affecting their work and home lives.