SINGAPORE : Singapore scientists have found a new way to process animal bones, and turn them into scaffolds that are as good as natural bones which can be implanted directly into patients.

Inexpensive and easily available, this bone material could soon replace existing material now used for bone repair.

This pig's bone was once part of Dr Mao Pei-Lin's soup stock for her son.

But it is now the bio-engineering scientist's research material.

In the past, surgeons repaired broken bones by grafting human or animal bones that have been cleaned and purified with solvents under extreme high temperature.

The problem with this process is - it is expensive, and the high temperature could change the original chemical components and structure of the bone.

Another problem - the solvents used are also highly toxic and not easily removed.

To overcome these problems, scientists at the Institute of Bio-engineering and Nanotechnology first treat the bone with mild solvents.

Then they boil it repeatedly, and run it through further ultrasound treatment.

The result - a bone scaffold that is almost like natural human bone, on which new bone cells can grow and mature into healthy tissue.

The bio-processed bone is safe and can be implanted into the patient's body, without the risk of viral infection or immune rejection.

Dr Mao Pei-Lin, Lead Scientist at the Institute of Bioengineering and Nanotechnology, said: "I did a series of tests to remove the impurities. And I have stored my bio-processed bone for implantation in sterile conditions for up to one year and its original structure remains intact."

The best part is - the method is simple and can be done at a very low cost.

Two Singapore hospitals are interested to test the new bone scaffold on larger animals.

If successful, the next step would be to use the bone on humans. - CNA