

New technology on the way to aid cancer sufferers who lose their hair after chemotherapy

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Researcher Omar Hussain (left) with Paxman Coolers MD Richard Paxman

Cancer sufferers who lose their hair as a consequence of chemotherapy will benefit from a major research project that will improve the scalp cooling technology that prevents hair loss.

The research is being now underway and is being pioneered by global

scalp cooling manufacturing company, Paxman Coolers, of Fenay Bridge, Huddersfield, in conjunction with the biology department of the University of Huddersfield.

The research will be led by key researcher Omar Hussain, who has a background in the pharmacology of cancer treatment, which he will use towards his PhD.

Omar joined Paxman's originally as a researcher on a joint government-sponsored Knowledge Transfer Partnership between the company and the university designed to establish the scientific basis of scalp cooling and its success rate with different drugs.

He was supervised by the University's Dr Nik Georgopoulos and Dr Andrew Collett and he co-authored an [article in the specialist journal *Toxicology in Vitro*](#) on the findings of the project.

For Paxman's Managing Director, Richard Paxman, the research represents an exciting development that will enable further improvements in the treatment and the technology.

"When a patient comes to us and asks what the chances are of keeping their hair, at the moment we are very fair and say they are 50 per cent. Now we want to take that up to 80 per cent and we believe that greater understanding of the scientific mechanisms will allow us to do that," he said.



Omar Hussain – who has presented his research at several international conferences, in tandem with a Paxman team – described how he replicated the effect of scalp cooling in laboratory conditions.

Cells were taken from hair follicles and subjected to a simulation of [chemotherapy](#) treatment. Experiments were conducted with different levels of temperature, from 37 degrees C – the normal temperature of the human body – and then lowered. As the temperatures fell, cell survival increased.

"Compared with 37 degrees there are huge differences," said Omar. "At low temperatures, cells are being rescued and maintained well and this

promotes the cooling effect." He added that the optimum temperature for scalp cooling is yet to be finalised, although it is below 22 degrees C.

After extensive testing and research – with Omar closely involved – Paxman Coolers plans to launch a fourth generation scalp cooler in 2016. Richard Paxman said that acceptance of scalp [cooling technology](#) was initially slow during the early years of development, but sales have grown by at least 20 per cent annually for the past five years and are expected to accelerate further. Export business is especially strong.

More information: The article, Use of in vitro human keratinocyte models to study the effect of cooling on chemotherapy drug-induced cytotoxicity, by Wafaa Al-Tameemi, Christopher Dunnill, Omar Hussain, Manon M. Komenc, Corina J. van den Hurk, Andrew Collett and Nikolaos T. Georgopoulos is in *Toxicology in Vitro*, Vol 28, Issue 8, December, 2014.

Provided by University of Huddersfield

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