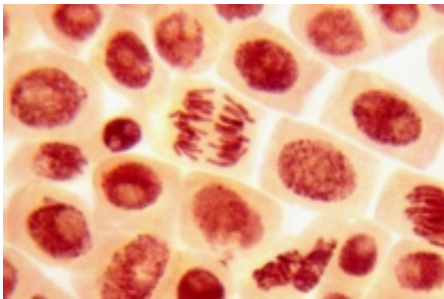


Dental pulp stem cells transformed by 'bad breath' chemical

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Japanese scientists have found that the odorous compound responsible for halitosis – otherwise known as bad breath – is ideal for harvesting stem cells taken from human dental pulp.

In a study published today, Monday 27 February, in IOP Publishing's *Journal of Breath Research*, researchers showed that [hydrogen sulphide](#) (H_2S) increased the ability of adult [stem cells](#) to differentiate into hepatic (liver) cells, furthering their reputation as a reliable source for future liver-cell therapy.

This is the first time that liver cells have been produced from human dental pulp and, even more impressively, have been produced in high numbers of high purity.

"High purity means there are less 'wrong cells' that are being differentiated to other tissues, or remaining as stem cells. Moreover, these facts suggest that patients undergoing transplantation with the hepatic cells may have almost no possibility of developing teratomas or cancers, as can be the case when using bone marrow stem cells," said lead author of the study Dr. Ken Yaegaki.

The remarkable transforming ability of stem cells has led to significant focus from research groups around the world and given rise to expectations of cures for numerous diseases, including Parkinson's and Alzheimer's.

In this study, Dr. Ken Yaegaki and his group, from Nippon Dental University, Japan, used stem cells from dental pulp – the central part of the tooth made up of connective tissue and cells – which were obtained from the teeth of dental patients who were undergoing routine tooth extractions.

Once the cells were sufficiently prepared, they were separated into two batches (a test and a control) and the test cells incubated in a H₂S chamber. They were harvested and analysed after 3, 6 and 9 days to see if the cells had successfully transformed into liver cells.

To test if the cells successfully differentiated under the influence of H₂S, the researchers carried out a series of tests looking at features that were characteristic of liver cells. In addition to physical observations under the microscope, the researchers investigated the cell's ability to store glycogen and then recorded the amount of urea contained in the cell.

"Until now, nobody has produced the protocol to regenerate such a huge number of hepatic cells for human transplantation. Compared to the traditional method of using fetal bovine serum to produce the cells, our method is productive and, most importantly, safe" continued Dr.

Yaegaki.

Hydrogen sulphide (H_2S) has the characteristic smell of rotten eggs and is produced throughout the body in the tissues. Although its exact function is unknown, researchers have been led to believe that it plays a key role in many physiological processes and disease states.

More information: "Hydrogen sulphide increases hepatic differentiation in tooth-pulp stem cells" Ishkitiev et al. 2012 *J. Breath Res.* 5 017103. iopscience.org/1752-7163/6/1/017103

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