BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

Fat influences decisions taken by brain cells

December 31, 2012 | News | By BioSpectrum Bureau



Singapore: Researchers at Karolinska Institutet, Sweden, identified two molecules that help in the survival and production of neurons in the brain. The study was published in the journal, *Nature Chemical Biology*.

The same team of researchers had previously pointed out that liver X receptors (LXR) are necessary for the production of different types of neurons in the developing ventral midbrain. However, it was not known as to which molecules stimulated LXR in the midbrain, so that the production of new neurons could be initiated.

The scientists found that two molecules named cholic acid and 24,25-EC that bound to LXR and activated it. These molecules are bile acid and a derivate of cholesterol, respectively. The first molecule, cholic acid, influences the production and survival of neurons in what is known as the red nucleus, which is important for incoming signals from other parts of the brain. The other molecule, 24,25-EC, influences the generation of new dopamine-producing nerve cells, which are important in controlling movement.

The study also concluded that 24,25-EC could be used to turn stem cells into midbrain dopamine-producing neurons, the cell type that dies in Parkinson's disease. This finding opens the possibility of using cholesterol derivatives in future regenerative medicine, since new dopamine-producing cells created in the laboratory could be used for transplantation to patients with Parkinson's disease.

The research team was led by Dr Ernest Arenas, professor, stem cell neurobiology, department of medical biochemistry and biophysics, Karolinska Institutet. The study has been financed by grants from (among other bodies) the Swedish Brain Foundation, the European Union, the Swedish Foundation for Strategic Research, Karolinska Institutet and the Swedish Research Council.