

Anti-cancer agent could be used to prevent premature birth

23 October 2009

(PhysOrg.com) -- Trichostatin A, an agent initially investigated in the laboratory as a possible cancer therapy, has been shown to inhibit contractions in muscle from the uterus and could have a role in preventing premature labour.

Around 50,000 babies are born too early in the UK each year, yet little is known about what causes [premature birth](#) or how to prevent it. Premature birth is the biggest single cause of death in infants, and around 1,500 babies die in the UK as a result of this. A variety of drugs are used to reduce the incidence of premature labour, but few are effective and some have serious side effects.

It has been previously shown that protein kinase A (PKA), is involved in controlling the relaxation of the uterus during pregnancy, and that levels of PKA are higher in pregnant woman compared to non-pregnant woman and then decrease at the start of labour.

Researchers using uterine muscle samples from patients at the Royal Victoria Infirmary, Newcastle showed that the drug, Trichostatin A, increased the levels of a protein subunit of PKA and also inhibited smooth muscle contractions in these tissues.

The research, carried out by a team at Newcastle University, was funded by leading children's charity, Action Medical Research.

Professor Nick Europe-Finner, the project leader and Professor of Myometrial Science at Newcastle University, said: "This is an exciting new discovery as we now know that protein kinase A has an important role in controlling relaxation of the uterus during pregnancy. The discovery that Trichostatin A can inhibit contractions, presumably due to its effect on PKA, means that this drug could potentially be used to prevent premature labour, however further laboratory studies are needed to assess the effectiveness of this and similar anti-

cancer agents."

Dr Magdalena Karolczak-Bayatti, Research Fellow, Newcastle University commented: "More laboratory research should help us to determine exactly how Trichostatin A regulates PKA levels and affects uterine muscle contraction. "

Premature birth can have negative, long-lasting effects on both the mother and the baby. For many women, preterm labour is shocking, frightening and unexpected.

"This project has uncovered some of the molecular pathways that regulate uterine contractions and so could be linked to premature birth. The results showing that Trichostatin A can inhibit contractions in the uterus means it could have a role in preventing premature birth. Finding a new treatment for early labour would be a major step forward," says Dr Yolande Harley, Deputy Director of Research at Action Medical Research.

There are several factors which can increase a woman's risk of going into premature labour including age, infection and inflammation. However, often, the first indication of a problem is when a woman arrives at hospital in preterm labour. Many premature babies, particularly those who are born very early, are at risk of developing serious problems, such as cerebral palsy, blindness, deafness and developmental delay.

Provided by Newcastle University

APA citation: Anti-cancer agent could be used to prevent premature birth (2009, October 23) retrieved 1 May 2021 from <https://medicalxpress.com/news/2009-10-anti-cancer-agent-premature-birth.html>

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