Selective estrogen targeting to protect the heart and blood vessels

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Diseases of the blood vessels and heart, which are known as cardiovascular diseases, are the most common causes of death in the US. They include heart failure and atherosclerosis (also known as hardening of the arteries), which is a common cause of heart attack and stroke.

The hormone estrogen is thought to have cardiovascular protective effects.

However, hormone therapy with estrogen alone increases the risk of uterine cancer in women.

By dissecting the different pathways by which estrogen signals to cells in mice, a team of researchers, led by Philip Shaul, at the University of Texas Southwestern Medical Center, Dallas, has now determined that it might be possible to selectively harness the cardiovascular benefits of estrogen.

Specifically, the team found that an estrogen-dendrimer conjugate that activated only the subset of estrogen receptors (the proteins to which estrogen binds to mediate its effects) that reside at the cell membrane, and not those in the nucleus, promoted cardiovascular protection in mice and did not stimulate either uterine enlargement or breast cancer xenograft growth.

In an accompanying commentary, Michael Mendelsohn and Richard Karas, at Tufts Medical Center, Boston, suggest that, "translation of

these findings into clinically relevant therapeutic interventions is a logical next goal." However, they caution that there is a long road ahead to realizing this goal.

More information:

-- Non-nuclear estrogen receptor alpha signaling promotes cardiovascular protection but not uterine or breast cancer growth in mice. View this article at: www.jci.org/articles/view/3829 … c015821411b383d31bcb

-- Rapid progress for non-nuclear estrogen receptor signaling. View this article at: www.jci.org/articles/view/4375 … 7a8813a647a56ec32c16

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