Estrogen receptor β actions in the female cardiovascular system: A systematic review of animal and human studies.

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Abstract

Five medical databases were searched for studies that assessed the role of ERβ in the female cardiovascular system and the influence of age and menopause on ERβ functioning. Of 9472 references, 88 studies met our inclusion criteria (71 animal model experimental studies, 15 human model experimental studies and 2 population based studies). ERβ signaling was shown to possess vasodilator and antiangiogenic properties by regulating the activity of nitric oxide, altering membrane ionic permeability in vascular smooth muscle cells, inhibiting vascular smooth muscle cell migration and proliferation and by regulating adrenergic control of the arteries. Also, a possible protective effect of ERβ signaling against left ventricular hypertrophy and ischemia/reperfusion injury via genomic and non-genomic pathways was suggested in 27 studies. Moreover, 5 studies reported that the vascular effects of ERβ may be vessel specific and may differ by age and menopause status. ERβ seems to possess multiple functions in the female cardiovascular system. Further studies are needed to evaluate whether isoform-selective ERβ-ligands might contribute to cardiovascular disease prevention.

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