

Estrogen and cardiovascular risk in menopausal women

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Women are less prone to cardiovascular disease than men; but this difference between the sexes becomes less marked after the menopause. This observation is behind a great deal of received wisdom, where oestrogen is assumed to have a beneficial effect on the heart and blood vessels. Today, new data seems to question these presuppositions. A study has been conducted by a team of Inserm researchers, directed by Pierre-Yves Scarabin (Inserm Unit 1018 "Centre for Epidemiology and Population Health Research"), on 6,000 women aged over 65; its results demonstrate, for the first time, that women with high levels of oestradiol in their blood are exposed to a greater risk of myocardial infarction or strokes.

The results are published in the *Journal of the American Heart Association*.

Oestrogen hormones play a key role in [sexual development](#) and reproduction in women. Oestradiol is the most active hormone. Its blood levels are particularly high during the active reproductive period. After the menopause, the ovarian function ceases, leading to a significant drop in oestrogen levels in the blood (the adipose tissue then becomes the main source of oestrogen). However, low concentrations of these hormones do continue to circulate and may still exert biological actions.

Throughout their lives, women are less exposed to the risk of cardiovascular disease than men. For many years, this relative immunity displayed by women was attributed to oestrogen undertaking a 'protector' role in terms of atherosclerosis and its complications. However, this hypothesis was not confirmed by recent research into the [hormonal treatment](#) of the menopause. Oestrogen administration does not prevent ischaemic [arterial disease](#) in [menopausal women](#) and could even have a harmful effect on women in the highest age bracket.

Until now, no study has been able to clearly identify the link between circulating endogenous sexual hormones and the cardiovascular risk in menopausal women.

Today, this [knowledge gap](#) has been reduced by the results of a French cohort study (Three City Study-3C) performed on approximately 6,000 women aged over 65 from among the general public. Oestradiol levels in the blood were measured upon entry into the cohort and, after monitoring performed over a four year period, 150 new cases of cardiovascular disease had appeared.

For the first time, the results demonstrate that high oestrodial levels in the blood lead to an increased risk of [myocardial infarction](#) or strokes, although the cause and effect link is not shown. This relation is not influenced by other known factors for [cardiovascular risk](#), namely diabetes and obesity.

Other results show that oestrogen seems to affect some mechanisms involved arterial obstruction, which causes cardiovascular disease. Although the coagulative effect of oestrogen is clearly defined, significant research is now required to establish its role in the inflammatory process, particularly in obese women, where the accumulation of adipose tissues is associated with high oestrogen levels.

This new data questions the beneficial role of oestrogen on the heart and vessels. "Fresh studies must confirm this harmful effect and establish whether these results can be applied to younger menopausal women" stated Pierre-Yves Scarabin.

More information: High Level of Plasma Estradiol as a New Predictor of Ischemic Arterial Disease in Older Postmenopausal Women: The Three-City Cohort Study, *J Am Heart Assoc*, [dx.doi.org/D10.1161/JAHA.112.001388](https://doi.org/10.1161/JAHA.112.001388)

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