

The hop phytoestrogen, 8-prenylnaringenin, reverses the ovariectomy-induced rise in skin temperature in an animal model of menopausal hot flashes

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The mechanisms underlying menopausal hot flashes are poorly understood, although it is generally assumed they result from disturbances of thermoregulatory centres in the hypothalamus. 8-Prenylnaringenin (8-PN) has been identified as a potent phytoestrogen in hops (*Humulus lupulus*) and there are claims that hop-containing preparations can reduce hot flashes. We have investigated the site of action of 8-PN in a rat model of menopausal hot flashes, in which the tail skin temperature (TST) is increased after oestrogen withdrawal induced by ovariectomy. Daily s.c. administration of either 17 β -oestradiol (E₂; 4 μ g/kg) or 8-PN (400 μ g/kg) significantly reduced the elevated TST after 2 days of treatment. Subcutaneous co-administration of either E₂ or 8-PN with the oestrogen receptor (ER) antagonist, ICI 182,780 (200 μ g/kg), which is thought not to cross the blood-brain barrier, completely blocked the effect of E₂ and 8-PN on TST. The ER- and ER β -specific agonists, 4,4',4''-(4-propyl-[1H]-pyrazole-1,3,5-triyl)trisphenol (100 μ g/kg) and 2,3-bis(4-hydroxyphenyl)-propionitrile (60 μ g/kg) respectively, both significantly reversed the raised TST in ovariectomised rats. These observations suggest that the regulation of the vasomotor response by oestrogens and phytoestrogens is mediated, at least in part, by peripheral mechanisms involving both ER and ER β .