THE EFFECT OF OVARIECTOMY AND DIETARY PHYTOESTROGEN ON RELAXANT RESPONSES TO ADENOSINE RECEPTOR ANALOGUES IN THE RAT ISOLATED BLADDER.
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Introduction. Adenosine induces relaxation of the bladder and is formed from ATP which is released from NANC nerves innervating the bladder and in the uroepithelium in response to hydrostatic pressure and stretch. This study examined the effect of ovariectomy and dietary phytoestrogen on adenosine receptor mediated relaxant responses in the rat isolated bladder.

Methods. Female Wistar rats (8 weeks) were anaesthetised (ketamine 60 mg/kg and xylazine 8 mg/kg, IP) and the ovaries were removed (ovx) or left intact (sham). Rats were fed either normal rat chow or a non-soy diet. At 12, 24 or 52 wks of age rats the bladder was dissected into two sections and the segments placed in 25 ml organ baths filled with Krebs-Henseleit solution, kept at 32 °C, gassed with a 5% CO₂: 95% O₂ mix and placed under 1g tension. The bladder was precontracted with 3 μM carbachol prior to a concentration response curve to 5’-(N-ethylcarboxamido) adenosine (NECA).

Results. In bladders from 12 wk rats, NECA induced relaxant responses in all the treatment groups studied with an enhanced effect observed in soy treated sham rat bladders with a maximum relaxant response of 40.14 ± 12.18% (n=8) in soy sham treated rats vs 25.13 ± 5.56% (n=8) in non soy sham treated rats (P<0.05). At 24 wks the relaxant responses to NECA were attenuated in all the groups studied except soy treated sham rat bladders in which the relaxant response was maintained. However, at 52 wks of age, no relaxant effects were observed in any of the treatment groups and NECA induced contractile responses.

Discussion. The results indicate that with age a loss of bladder relaxation to adenosine occurs. While a soy diet improves relaxant effects of adenosine in bladders from younger rats the benefits are lost with advancing age.