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INTERACTIONS BETWEEN COX-2 AND NITRIC OXIDE SYNTHASE OF ESTROGEN AND ISOFLAVONES IN VIVO

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Cyclooxygenase(COX) metabolizes arachidonic acid to prostaglandins and thromboxanes. It has been reported that there is 'cross-talk' between COX-2 and nitric oxide synthase(NOS). Stimulation of eNOS of estrogen fed animal heart was not accompanied by the increase in COX-2 expression. However, compared to the isoflavone fed animals Cox-2 expression was higher in estrogen feeding. In the brain of estrogen or isoflavone fed female rats, COX-2 expression pattern was similar to the heart, but nNOS was up-regulated only by isoflavone feeding. The in vivo system of ovariectomized rats, COX-2 expression was up-regulated by estrogen accompanied by the increase in NO concentrations. Genistein, one of isoflavone compounds did not have this effect. In the system of Spontaneously Hypertensive Rats, isoflavones feeding resulted in the up-regulation of COX-2 and the increase in NO concentrations. The possible 'cross-talk' between NOS and COX-2 was observed only certain in vivo systems such as ovariectomized estrogen fed rats or isoflavone fed SHRs. The other systems observed did not show this kind of cross-talk. Further studies are needed to elucidate the exact pattern and mechanism of NOS and COX-2 cross talk.

keyword : COX-2, NOS, Estrogen, Isoflavones