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## Effect of Bromelain and vitamin E on Skeletal abnormalities induced by bisphenol A in rat's fetus

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### Abstract

Bisphenol A (BPA) is a widely used industrial plasticizer with known estrogenic properties. Prenatal exposure to BPA has been associated with adverse birth outcomes. Bromelain belongs to a group of protein-digesting enzymes obtained commercially from the fruit or stem of pineapple. It is known to possess antioxidant and immunomodulatory effects and protects against oxidative stress in experimental models. The aim of the present study was to evaluate the effectiveness of Bromelain and vitamin E (a well-known antioxidant) on skeletal abnormalities of BPA. In this experimental study, 34 pregnant rats were divided into 6 groups. Control group received olive oil and test groups received, BPA (300 mg/kg, gavage), Bromelain (40 mg/kg, ip), BPA plus Bromelain (10 mg/kg, ip), BPA plus Bromelain (40 mg/kg, ip) and BPA (300 mg/kg, ip) plus Vitamin E (100 mg/kg, ip), at 6-15th days of gestation. Fetuses were collected at 20th day of gestation and were stained by Alizarin red-alcian blue method and the skeletal system was examined by the stereomicroscope. The results showed that the cleft palate, spina bifida, non-ossification in sternum and last rib, and delayed ossification in forelimb and hindlimb incidence were ۶۰,۷۱٪, ۳۹,۲۸٪, ۵۰٪, ۱۰,۷۱٪, ۴۲,۸۵٪ and ۴۲,۸۵٪ in fetuses of rat received only BPA, respectively. However, it decreased to 29.72%, 12.51%, 0%, 10.81 and 10.81% by bromelain (10 mg/kg) and so to 0%, 0%, 0%,0%, 4.56% and 4.56% by bromelain (40 mg/kg), respectively. Percentage of these abnormalities in fetuses that received BPA plus vitamin E decreased to 26.26%, 6.66%, 16.21%, 0% and 6.66%, respectively. Regardless of the protective mechanism of bromelain, the results showed that bromelain could well reduce BPA induce skeletal abnormalities dose-dependent or even to zero. But it is best to take caution during pregnancy

**Keywords:** Bisphenol A, Bromelain, Fetus, Rat, Skeletal abnormality