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It is well-known that bisphenol A(BPA), an industrial raw material for polycarbonate and epoxy resins, shows estrogenic activity. Recent research from our laboratory has shown that BPA disrupts interaction between thyroid hormone and its receptor in a non-competitive manner, and alters the thyroid-hormone dependent expression of growth hormone(GH) and prolactin(PRL). In this study, we investigated the influence of BPA on the thyroid hormone system in vivo model to establish a screening method for endocrine disruptors. BPA (1mg/kg/day; 2mg/kg/day) were administered to Sprague-Dawley rats in drinking water during the pregnancy and lactation. We determined the maternal plsma levels of total T4 before the day of administration and on days 7, 14, 20 of gestation and day 7 of lactation, and neonatal plasma levels of total T4 on postnatal days of 4, 7, 14, and body weight on postnatal days of 4, 5, 7, 12, 14. In addition that, immunohistochemical study was performed to determine the levels of thyroid hormone receptor protein β1 and β2(TR-β1, β2) in cerebral cortex of neonates on postnatal days of 5, 7, 14. Plasma concentrations of total T4 in dams and those of total T4 in neonates were not altered by maternal treatment with BPA. Strong signals of thyroid receptor were seen in the neonatal brain exposed to BPA or PTU perinatally compared to normal pups', which indicates that TR-β1 and TR-β2 were overexpressed by BPA exposure and hypothyroidism. These results suggest that the perinatal exposure to BPA can disturb the thyroid hormone system resulting in overexpression of thyroid hormone receptor in the cerebral cortex of the neonates.

[PA4-38] [04/17/2003 (Thr) 14:00 - 17:00 / Hall P]

Effects of Polycyclic Aromatic Hydrocarbons on Liver and Lung Cytochrome P450s in Male ICR Mice

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Certain polycyclic aromatic hydrocarbons (PAHs) have been reported to induce cytochrome P450 (P450) 1A1 and 1A2. In the present studies, the effects of six well-known PAHs on the activities of hepatic and pulmonary P450 enzymes were investigated in male ICR mice. When mice were treated intraperitoneally with 3, 10 and 30 mg/kg of individual PAHs for 3 consecutive days, the activities of ethoxyresorufin- and methoxyresorufin-O-dealkylases were significantly and differentially induced in liver and lung. Moreover, other P450 isozyme-associated monooxygenase activities were also induced significantly in liver and lung with characteristic induction profiles. Our present results suggest that individual PAHs might have inductive effects on P450 isozymes, and that the characteristic inductive effects of individual PAHs on certain P450 isozymes would be developed as a marker for determining exposure to certain PAHs. (Supported by the Echotechnopia21 Program, Ministry of Environment).

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Effects of Age, Brain-regional Selectivity, and Ovariectomy on Sexual Dimorphism of Organophosphate Pesticide Terbufos

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