

Molecular mechanism of secondhand smoke in female lung adenocarcinoma

Lung cancer is a leading cause of cancer deaths worldwide. Global cancer statistics disclosed that about 15% of male cases and 53% of female cases were nonsmokers. Adenocarcinoma is the most common histological type of lung cancer in nonsmokers, particularly nonsmoking women. Actually, women, smoking or not, are more likely to have lung adenocarcinoma than men, suggesting that estrogen plays a role in promoting lung adenocarcinoma development. Dr. Lih-Ann Li research team's animal study demonstrated that ER α -positive lung adenocarcinoma xenografts grew faster in intact female mice and estrogen-supplemented ovariectomized mice than in ovariectomized mice. Secondhand cigarette smoke is a key source of indoor air pollutants for nonsmokers. Exposure to secondhand cigarette smoke has been causally linked to lung cancer in nonsmoking women, who frequently have lung adenocarcinoma and show tumor ER α expression. Their results demonstrate that cigarette sidestream smoke particulate matter (CSSP), the major component of secondhand smoke, can regulate the transactivation activity, nuclear entry, phosphorylation, and turnover of ER α like estrogen. In addition, we examined the effect of estrogen and CSSP on cellular characteristics relating to tumor progression. Their data supports the idea that CSSP can promote lung adenocarcinoma progression via ER α and boost the tumor-promoting activity of estrogen. However, the estrogenic activity of CSSP is not originated from PAHs and metals found in CSSP.

