ISSN 0970-9274
JOURNAL OF HUMAN ECOLOGY
International Interdisciplinary Journal of Man-Environment Relationship

© Kamla-Raj 2000
PRINT: ISSN 0970-9274 ONLINE: 2456-6608
J Hum Ecol, 11(3): 201-213 (2000)
DOI: 10.31901/24566608.2000/11.03.04

Sister Chromatid Exchanges in Betal and Tobacco Chewers and Tobacco Smokers

P.K. Ghosh

Department of Anthropology, University of Delhi, Delhi 110 007, India

KEYWORDS Sister Chromatid Exchange. Tobacco Chewers or/and Smokers. Betel Chewers

ABSTRACT The frequency of sister chromatid exchange (SCE) in now believed to be a more sensitive indicator of genetic damage than chromosome aberrations. In the present study an attempt has been made to study the effect on individuals who are chewing and/or smoking tobacco and chewing betel. The findings are as follow:

1. The incidence of sister chromatid exchange (SCE) in human amnion cells and the lymphocytes of women from whom these amnion cells are derived was determined using the BrdU-Giemsa technique. The results showed that the SCE rate in the amnion cells is significantly less than the lymphocytes of women from whom these amnion cells are derived. Those SCE frequencies were not affected by the smoking habit of the pregnant women.
2. The incidence of sister-chromatid exchange (SCE) among betel chewers and betel-with-tobacco chewers showed higher yields of SCE than normal controls. Higher frequencies of SCE were also observed in individuals who chewed more than 10 betel leaves, or betel leaves-with-tobacco, per day, compared to people who chewed less than 10 betel leaves, or betel-with-tobacco, per day, respectively. Subject who had chewed betel leaves and betel leaves +tobacco for more than 10 years showed an elevated frequency of SCE.
3. The incidence of sister chromatid exchange (SCE) in bidi and cigarette smokers had a mean SCE per cell of 10.12 ± 2.41and 8.15 ± 1.62, respectively, which were significantly higher than the mean value of 5.48 ± 1.29 found in controls. Higher frequencies of SCE were also observed in individuals who smoked more than ten bidis or cigarettes per day, compared with people who smoked less than ten bidis or cigarette per day, respectively. Individuals who smoked bidis or cigarette for more than 10 years also showed an increased frequency of SCE as compared with those who smoked bidis or cigarette for less than 10 years.
4. The frequency of SCE was found to be 8.61 ± 1.89 in patients with oral leukoplakia, which was significantly higher than the mean SCE value of 5.58 ± 1.26 observed in normal controls. The frequency of SCE in patients with oral leukoplakia addicted to the single habit of betel with tobacco chewing, bidi/cigarette smoking, and combined habits of chewing and smoking of tobacco were found to be 7.95 ± 1.63, 63.8.17 ± 1.66, and 9.23 ± 2.14, respectively. These values were also significantly higher as compared to the SCE value observed in normal controls.
5. The frequency of SCE was 9.26 ± 2.15 in patients with oral submucous fibrosis, which was significantly higher than the mean SCE value of 5.49 ± 1.24 observed in normal controls. The frequency of SCE in patients with oral submucous fibrosis addicted to the habit of betel with tobacco chewing, 'bidi/cigarette smoking and combined habits of chewing and smoking of tobacco were 8.12 ± 1.69, 9.43 ± 1.87, and 10.06 ± 2.28, respectively. These values were also significantly higher as compared with the SCE values observed in normal controls.
6. The frequency of SCE was found to be 7.82 ± 0.24 and 8.27 ± 0.27 in non-chewing pregnant women and women using oral contraceptives respectively, which were significantly higher than the mean value of 5.21 ± 0.18 observed in non-chewing normal women. Betel chewing induced higher SCE in pregnant women and women using oral contraceptives, the frequencies being 11.79 ± 0.38 and 12.51 ± 0.44, respectively, which were significantly higher than the SCE frequency of 6.28 ± 0.21 found in normal betel chewing females.