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Poster Abstract - F.28

HIGH CHROMOSOME FRAGILITY IN TWO SHEEP HERDS EXPOSED TO HIGH DOSES OF DIOXINS DURING PASTURAGE

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Some large areas of Campania region, especially those of Naples and Caserta provinces, have largely been exposed to several environmental damages due to the illegal waste deposit and subsequent burning to save space. This has been the most important source of dioxins in a large territory where millions of people live. During the last four years several farms raising sheep, cattle and river buffaloes could not sell milk and their products due to the presence of dioxins (*17 different types*) in the milk mass over than the normal value permitted (3 pg/g of fat, as human WHO TCDD equivalent). Some farms, especially those showing relatively low levels of dioxins, were able to reduce the quantity of dioxins in the milk under the normal value by changing the food, but many of them, especially those raising sheep, did not. Indeed, about 12,000 animals among cattle, river buffaloes and sheep were mated until now. While the consumers are adequately protected by possible intake of dioxins present in the animal products (mainly milk), the breeders are exposed to high economic damages only partially reimbursed by Campania region and Government.

Dioxins are not naturally present in the environment but are produced by combustion of several materials in presence of chlorine (*the domestic waste contains large quantities of chlorine*).

Being lipophilic, dioxins are accumulated in the food chain (*fat of animals and fishes*) and have a long life (*from 7 to 11 years are necessary to reduce of 1/2 the dioxins in the body*). In a previous and preliminary study performed in two sheep herds exposed to relatively low levels of dioxins (*5.3 pg/g of fat in the milk mass*) we found significant increasings of chromosome fragility in the cells of exposed herds compared to those of sheep (control) unexposed. In the present study, larger samples of animals (34 and 42 sheep from two herds) raised in the province of Naples (Acerra municipality) and where high levels of dioxins (50.65 and 39.51 pg/g of fat, respectively) were found in the milk mass, were cytogenetically investigated and compared with 20 sheep (control) raised 80 Km far from the exposed area. Higher increasings of both chromosome abnormalities (*gap, chromosome and chromatid breaks*) and SCEs were found in both herds, when compared with the control and the differences were highly significant ($P<0.001$). No statistical differences were found when comparing the aneuploid cells of exposed animals (16.4 % and 17.8%) and control (17.9%). High percentages of abortion, abnormal foetuses and mortality were found in one of two herds, while no data concerning the same parameters were available for the second farm (all sheep of this farm were mated at the December 2003).

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