

EPRBioDose 2010

International Conference

Mandelieu-La-Napoule (France)
October 10-14, 2010

**PROGRAMME
and
ABSTRACT BOOK**



Istituto Superiore di Sanità

IRSN

**INSTITUT
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE**

Index of Posters

Subject	Poster numbers
Dosimetry in emergencies	1-2
Biodosimetric triage	4-5
Tooth enamel	6-15
Cohort studies	16-19
High dose sterilization	20-23
Luminescence retrospective dosimetry	24-26
Dosimetry in medicine	27-36
Biological retrospective dosimetry	37
EPR retrospective dosimetry	38-44
Dating	45-53
PCC techniques	54-55
Basic processes	56-59
Gamma-H2AX and micronuclei assays	60-65
FISH/Dic	66-72
Multiparametric approach	73-76
Improvements in instrumentation	77-85

Note:

Posters will be displayed throughout the conference.

Prematurely Condensed Chromosome Rings after neutron irradiation of human lymphocytes

A. I. Lamadrid¹, J. E. González Mesa¹, O. García Lima¹, P. Voisin², and L. Roy²

¹ Center of Radiation Protection and Hygiene, Playa, La Habana, Cuba

² Institut de Radioprotection et de Sécurité Nucléaire, Fontenay-aux-Roses, France.

ana@cphr.edu.cu

Introduction. The Prematurely Condensed Chromosome Rings (PCC-ring) open new possibilities in cytogenetic dosimetry. Using this technique is possible the analysis of human chromosomes exposed to high radiation doses¹.

Objectives. Here we present a calibration curve for fission spectrum neutrons. The distribution of aberrations by cell after this high LET radiation was also analysed.

Material and methods. Human lymphocytes were exposed *in vitro* to neutron irradiation in a dose interval of 0.8 up to 24.4 Gy. Lymphocytes were cultured during 48 hours in the presence of phytohaemagglutinin, colcemid was added 24h after the beginning of the culture and Calyculin A was added 1h before the harvest². A total of 9 819 PCC cells in G1, G2 and M stages were analyzed.

Results. The best fitting between the frequency of PCC ring (Y) and the Dose (D) was obtained with the equation $Y = (0.071 \pm 0.002) \bullet D^3$. The saturation of the PCC-ring was observed after around 4 Gy, but it was possible to analyse cells exposed up to 24.4 Gy. The distribution of rings by cell follows Poisson or Neyman type distribution for all doses⁴.

Conclusions. This PCC-ring dose effect curve can be used in case of accidental overexposure to neutron radiation, allowing a dose assessment in a reliable and speedy way.

¹ Kanda R. et al. 1999. Int. J. Radiat. Biol. 75: 441-446.

² Lamadrid A.I. et al. 2007. J. Radiat. Res. 48: 1-6.

³ Papworth D.G. 1975. Radiat. Bot. 15: 127-131

⁴ Morand J. et al. 2008. Radiat. Prot. Dosimetry 128: 437-443