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This is the author's manuscript

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1507130> since 2018-03-18T20:04:39Z

Published version:

DOI:10.1007/s10577-012-9313-0

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This is the author's final version of the contribution published as:

Rubessa M., Iannuzzi A., Peretti V., Pauciullo A., Ciotola F., Albarella S., Cosenza G., Ramunno L., Iannuzzi L., Di Berardino D. Preliminary observations on Sister Chromatid Exchanges (SCEs) induced by high dosages of BrdU in metaphase chromosomes of the Agerolese breed of cattle (*Bos taurus*). *Chromosome Research* (2012) 20: 792

DOI: 10.1007/s10577-012-9313-0

The publisher's version is available at:

<https://link.springer.com/article/10.1007%2Fs10577-012-9313-0>

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Preliminary observations on Sister Chromatid Exchanges (SCEs) induced by high dosages of BrdU inmetaphase chromosomes of the Agerolese breed of cattle (*Bos taurus*)

Rubessa M.^a, Iannuzzi A.^b, Peretti V.^c, Pauciullo A.^a, Ciotola F.^c, Albarella S.^c, Cosenza G.^a,
Ramunno L.^a, Iannuzzi L.^b, Di Bernardino D.^a

^aDISSPAPA Dept., University of Naples “Federico II”, Portici, Italy

^bNational Research Council (CNR), ISPAAM, Lab. Of Animal Cytogenetics and Gene Mapping, Naples, Italy

^cDISCIZIA Dept., University of Naples “Federico II”, Naples, Italy.

The present study reports on Sister Chromatid Exchanges (SCEs) in lymphocytes of the Agerolese breed of cattle exposed to BrdU dosages of 10 and 300 µg/ml, (f.c.) for two cell cycles. Peripheral blood was drawn from 3 healthy cows, and cultured in duplicate for 72 h in RPMI 1640 medium plus 10 % FBS, L-glutamine, antibiotic-antimicotic, and Concanavalin-A. After 36 h from the initiation, BrdU (Sigma) was added to the cultures, respectively at 10 µg/ml and 300 µg/ml (f.c.). Slides were stained with acridine orange solution (0.010 % in Sorensen buffer, pH07.0). 20 metaphases were analyzed for each animal, for each dosage, with a total of 3,523 chromosomes.

The mean rate of SCE/cell was 5.85 ± 2.71 at the dosage of 10 µg/ml while it increased up to 33.93 ± 13.03 at the dosage of 300 µg/ml. The fraction of chromosomes ‘with’ exchanges was only 9% at the dosage of 10, while it increased up to 41.51 % at the dosage of 300. The exchanges (SCEs) observed at 10 µg/ml were of type 1 (8.84 %), type 2 (0.42 %) and type 3 (0.03 %), whereas at 300 µg/ml many more exchanges were observed as follows: type 1 (29.10 %), type 2 (9.54 %), type 3 (1.98 %), type 4 (0.77 %), type 5 (0.09 %) and type 6 (0.03 %). By increasing the BrdU final concentration from 10 to 300 µg/ml, the total number of exchanges visualized rised from 354 at 1,462 (4.13 times). These results encourage further insights into the SCE studies at high dosages of BrdU in order to better characterize the genome stability in the livestock species and breeds engaged in animal production.

Acknowledgements: This work was supported by the RARECA- PSR 214 project of the Campania Region (Italy)