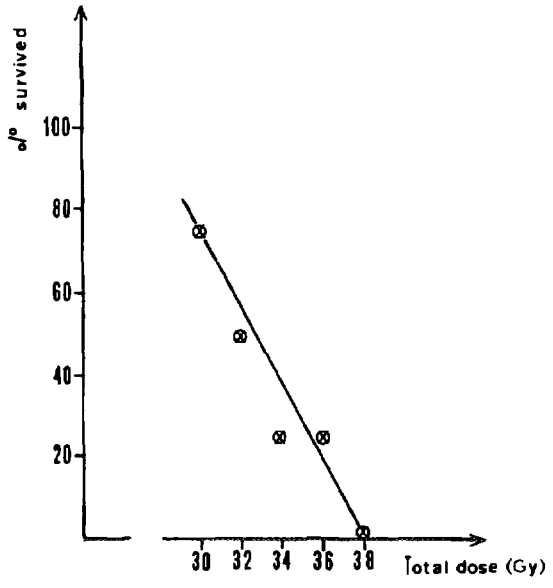

Fig.4: Mice survival measured 1 year after X-ray irradiation.

The Role of Poly(ADP-Ribose)Polymerase in the Induction *in Vitro* of Micronuclei in Down's Syndrome Lymphocytes by Mitomycin-C.

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Poly(ADP-ribose) is a nuclear polymer. This polymer is rapidly synthetised from cellular nicotinamide (NAD) by poly(ADP-ribose)polymerase in response to DNA strand breaks (1, 4). These breaks can be produced directly by agents such as X-rays and this DNA damage induces repair processes in which poly(ADP-ribose)polymerase plays an important role (3, 4). In order to understand better the function of poly(ADP-ribose)polymerase, 3-aminobenzamide (3-AB) has been used to inhibit this enzyme (2). The inhibition of polymerization by 3-AB permits a mutagenic agent (mitomycin-C) to attack the nuclear DNA, resulting in further damage and strand breaks of nuclear DNA (4).

The cytokinesis-blocked (CB) micronucleus assay has been used as a simple method of scoring damage to chromosomal material. This test consists of scoring micronnclei in lymphocytes having undergone one division after exposure to chromosome breaking (5, 6).

Blood was obtained from:

- healthy middle-age donors (normal I, normal II),
- mother of Down's syndrome patient (normal III),
- Down's syndrome patients (Down I, Down II),

Lymphocytes were cultured and cells were harvested and scored according to conditions described by Fenech and Morley (5). 3-AB was added at the beginning of cultures and mitomycin-C was added 24 hours later.

The level of micronuclei in cytokinesis-blocked normal and Down's syndrome lymphocytes after mitomycin-C treatment in the absence and the presence of 3-aminobenzamide is shown in Fig. 1.

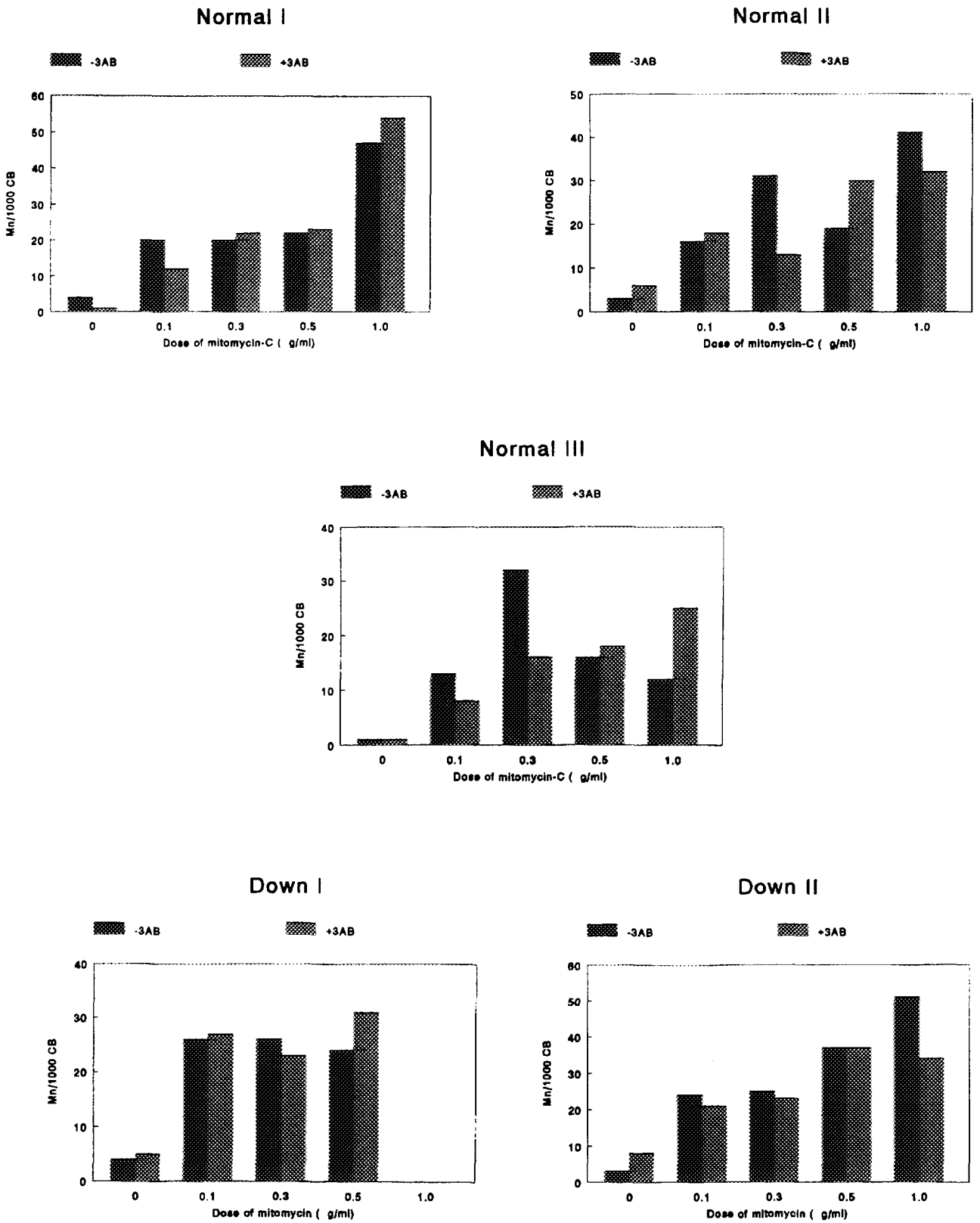

Fig.1 The level of micronuclei in cytokinesis-blocked normal and Down's syndrome lymphocytes after treatment with mitomycin-C in absence and presence of 3-Aminobenzamide.

The obtained results have shown that the level of micronuclei in Down's syndrome patients and in healthy donors is not elevated after adding 3-AB. However, a combined treatment with 3-AB and mitomycin-C revealed a higher level of micronuclei in both groups of donors as compared to the damaging effect of the same doses of mitomycin-C.

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