TNO Quality of Life

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TNO Report

V6657/02 | Final |

Unscheduled DNA synthesis test with 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol (C6AL) in rat liver hepatocytes

Date	10 January 2006
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Sponsor	Asahi Glass Co. Ltd 10 Goikaigan Ichiharashi Chiba 290-8566 Japan
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Statement of CLP compliance

I, the undersigned, hereby declare that this report constitutes a complete, true and accurate representation of the study and its results. All study activities performed by TNO Quality of Life were carried out in compliance with the current OECD Principles of Good Laboratory Practice (Organisation for Economic Co-operation and Development (as revised in 1997), Paris, ENV/MC/CHEM (98)/17).

TNO makes no GLP compliance claim for characterisation and verification of the test substance identity and properties; this is the responsibility of the sponsor.

Dr. C.A.M. Krul
(Study director)

Date 10 January, 2006

Approved by:

Dr. A.F.M. Kardinaal
(Management)

Date 10 January, 2006

Quality Assurance Statement

Report title : Unscheduled DNA synthesis test with 3,3,4,4,5,5,6,6,7,7,8,8,8-tri-decafluorooctanol (C6AL) in rat liver hepatocytes
Report number : V6657/02
Report date : 10 January 2006

The study plan was audited as follows:

Date of audit	Date of report:
3 November 2005	3 November 2005
16 December 2005 (Amendment 1)	16 December 2005

The experimental phase of this study was audited as follows:

Dates of audit:	Dates of report:
7 November 2005 (test substance administration)	8 November 2005
8 November 2005 (test substance preparation)	8 November 2005
10 November 2005 (isolation of hepatocytes, cell culture)	11 November 2005
12 December 2005 (UDS analysis: grain counting)	12 December 2005

This report and study documentation were audited as follows:

Start dates of audit:	Dates of report:
6 January 2006	6 January 2006
10 January 2006	10 January 2006

I, the undersigned, hereby declare that this report provides an accurate record of the procedures employed and the results obtained in this study; all audits were reported to the study director and the management on the dates indicated.

P.B. Davis, B.A.
Quality Assurance Auditor
TNO Quality of Life

Date 10 January 2006

Contents

Summary

1. The test substance, 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol, was examined for its potential to induce unscheduled DNA synthesis (UDS), a measure of DNA repair activity, in primary liver cells after short term exposure of rats.

2. A dose range finding test was performed to determine whether the limit dose of 2000 mg.kg-bw^{-1} would induce lethality in the UDS test. Two males and two females were treated with 2000 mg.kg-bw^{-1} of the test substance by gavage. Since the limit dose of 2000 mg.kg-bw^{-1} induced lethality and because no sex differences were observed, the UDS test was performed at two dose levels (1500 and 750 mg. kg-bw^{-1}) with males only.

3. Two doses (1500 and 750 mg.kg-bw^{-1}) were administered to male rats by gavage. Rats treated with the vehicle (corn oil) were used as negative controls. Rats treated with dimethylnitrosamine (DMN) at 10 mg.kg-bw^{-1} or 2-acetylaminofluorene (2-AAF) at 50 mg.kg-bw^{-1}, served as positive controls for the 2-4 hours and 12-16 hours post treatment time points, respectively.

4. At two time points (2-4 hours and 12-16 hours after treatment), animals were sacrificed by perfusion for isolation of hepatocytes. Unscheduled DNA synthesis was examined by autoradiography in monolayer cultures of hepatocytes, incubated in the presence of [methyl-^{3}H]-thymidine.

5. 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol did not increase the mean net nuclear grain (NNG) count in liver cells, compared to that in the control rats. This demonstrates that the test substance did not induce unscheduled DNA synthesis.

6. The positive controls DMN and 2-AAF induced the expected increase in unscheduled DNA synthesis in liver cells. This demonstrates the validity of the test system.

7. It is concluded that the test substance 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol did not induce unscheduled DNA synthesis in liver cells of male rats, exposed to the test substance by gavage under the conditions used in this study.

1 General

1.1 Study sponsor and monitor

Sponsor:	Asahi Glass Co. Ltd. 10 Goikaigan Ichiharashi Chiba 290-8566 Japan
Monitor:	Mr. Katsuji Ito

1.2 Testing facility

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1.3 Responsible personnel

Study Director	Dr. C.A.M. Krul (PSC) Tel: +31 30 69 44 167 Fax: +31 30 69 60 264 E-mail: Krul@voeding.tno.nl
Animal Care Management	G. van Beek (TAP) Dr. Ir. A.F.M. Kardinaal (PSC)

1.4 Time schedule

Arrival of the animals	2 November 2005
In life part study	7 – 11 November 2005
Last day of scoring	22 December 2005

2 Introduction

2.1 Objective

The purpose of this study was to provide data on the potential of 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol to induce unscheduled DNA synthesis (UDS) in liver cells of rats, exposed to the test substance by gavage.

The investigation, described in this report, was conducted according to the study plan and one amendment entitled: "Unscheduled DNA synthesis test with 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol (C6AL) in rat liver hepatocytes", which were approved by the study director on 28 October 2005 and 9 November 2005, respectively.

2.2 Applicable guidelines

The study plan has been drafted in accordance with:

- OECD guideline 486 "Unscheduled DNA Synthesis (UDS) Test with Mammalian Liver Cells *in Vivo*", adopted 21 July 1997.

3 Deviations from the study plan

- One animal (F84) was sacrificed slightly later than 4 hours (4:01 (h:m)), instead of between 2-4 h.
- Hepatocytes of four animals (C34, C36, D50 and D52) were allowed to attached for a period longer than 4 hours, instead of between 2-4 h (i.e. between 4:21 and 6:39 (h:m))

Neither of these deviations are considered to have negatively influenced the validity and outcome of the study.

4 Materials and Methods

4.1 Materials

4.1.1 *Test substance*

Name	3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol
Other name	C6AL
Batch number	re-AL-27,28
Appearance	transparent liquid
Purity	98.5 %
Date of receipt	26 April 2005
Expiry date	26 April 2006
Storage conditions	ambient temperature
Supplier	Asahi Glass Co. Ltd.
TNO ref. no.	050104

4.1.2 *Ancillary substances (positive controls)*

N-nitrosodimethylamine (TNO ref. no. 0400C8) and 2-acetamidofluorene (2-AAF, TNO ref. no. 030092) were obtained from Sigma-Aldrich (Schnelldorf, Germany).

4.2 Test system

4.2.1 *Animals, housing and care*

Forty male and four female young adult (7-8 week old) Wistar outbred rats, strain Crl:[WI] WU BR, were obtained from a colony maintained under SPF-conditions at Charles River Deutschland, Sulzfeld, Germany. This rat strain is commonly used in *in vivo* genotoxicity tests. Eight animals (4 males and 4 females) were used in the dose range finding test (section 4.3.2). Thirty animals were used in this UDS test, while the additional animals (6 males) were used in the UDS test that was performed simultaneously with 2-N,N-diethylaminoethylmethacrylate in the same room (TNO report V6657/01).
The animals arrived on 2 November 2005. Serological examination of the microbiological status of the rats was carried out one day after arrival and the results were satisfactory. The animals were released from quarantine on 4 November 2005. They were housed under conventional conditions in one room (5.2.01), in sterilized Macrolon cages (type IV) with a grid cover of stainless steel and with a bedding of wood shavings, with three rats per cage. The room was ventilated with about 10 air changes per hour and was maintained at a temperature of 22 ± 3 °C and a relative humidity of at least 30 % and not exceeding 70 % other than during wet cleaning. Lighting was artificial with a sequence of 12 hours light and 12 hours dark. Prior to treatment the animals were checked daily for overt signs of ill health and anomalies.

4.2.2 *Feed and drinking water*

Feed and drinking water were provided *ad libitum* from the arrival of the animals until the end of the study.

The animals received a commercial rodent diet (Rat and Mouse No. 3 Breeding Diet, RM3; batch no. 4543). Each batch of this diet is analysed by the supplier (SDS Special Diets Services, Witham, England) for nutrients and contaminants. The certificates of analysis pertaining to the batches used in this study are stored in the archives of TNO Quality of Life, Zeist, The Netherlands.

Drinking water (tap water) was given in bottles, which were cleaned about weekly and filled up when necessary. Tap water suitable for human consumption (quality guidelines according to Dutch legislation based on the EEC Council Directive 98/83/EEC), was supplied by Hydron Midden-Nederland. Results of the routine physical, chemical and microbiological examination of drinking water as conducted by the supplier are made available to TNO Quality of Life. In addition, Hydron Midden-Nederland periodically (twice per year) analyses water samples taken on the premises of TNO in Zeist for a limited number of physical, chemical and microbiological variables. The results of the samples taken during or close to the conduct of the study are stored in the archives of TNO Quality of Life.

4.3 Experimental procedures

4.3.1 *Administration of the test substance*

Corn oil was used as the vehicle and a dilution of the test substance (75 and 37.5 $mg.mL^{-1}$) was prepared in corn oil. Just before dosing the animals were weighed to determine the dosing volume. The test substance was administered to the unfasted rats by gavage, dosing volume was 20 $mL.kg\text{-}bw^{-1}$. The oral route was selected as it was considered the most likely exposure route for humans. A negative control group was treated in a similar way with the vehicle (corn oil).

One positive control group (late sampling time: dosing 12-16 hours prior to sacrifice) was treated by gavage with the mutagen 2-acetylaminofluorene (2-AAF; 50 $mg.kg\text{-}bw^{-1}$; 2.5 $mg.mL^{-1}$ in corn oil). Another positive control group (short sampling time: dosing 2-4 hours prior to sacrifice) was treated by gavage with the mutagen dimethylnitrosamine (DMN; 10 $mg.kg\text{-}bw^{-1}$, 0.5 $mg.mL^{-1}$ suspended in phosphate buffered saline PBS).

The concentrations of the study substances in the test solutions were not determined analytically; the dosages quoted in the report are therefore nominal ones.

4.3.2 *Dose range finding test*

The reported LD50 of the test substance is 4696 mg.kg-bw^{-1} for rats and it is 1250 mg.kg-bw^{-1} for mice (data provided by the Sponsor). To determine whether the limit dose of 2000 mg.kg-bw^{-1} would induce lethality in the main UDS test, and because no sex data were available, a limited dose range finding toxicity test was performed just before the start of the UDS test.

The limit dose level, 2000 mg.kg-bw^{-1} (100 mg.mL^{-1} in corn oil) was administered to two males and two females. Four animals (2 males and 2 females) served as reserve animals for the dose range finding test. Observations with respect to all signs of reaction to the treatment were recorded once during the first 4 hours post-treatment and after approximately 22 hours.

Animal no.* 2000 mg.kg-bw^{-1}	**Observation**	**Time after administration** 1 – 4 h	22 h
1,3,4	sluggishness	x	x
	blepharospasm		x
	piloerection	x	x
	low temperature		x
2	sluggishness	x	x
	blepharospasm		x
	piloerection	x	x
	low temperature		x**

* even numbers pertain to males, odd numbers to females
** found dead approximately 24 h after administration

Animal no.	**Body weight (g) prior to dosing**	**Body weight (g) 22 h after dosing**
Males		
2	290.5	249.8
4	271.2	265.0
Females		
1	200.1	185.9
3	199.7	179.9

Since the limit dose of 2000 mg.kg-bw^{-1} induced lethality and because no sex differences were observed, the UDS test was performed at two dose levels (1500 and 750 mg. kg-bw^{-1}) with males only.

4.3.3 *UDS test*

Dose levels
The study comprised five groups, viz. two test groups receiving the test substance, one negative control (vehicle, corn oil) group and two positive control groups.

Experimental groups
Prior to the start of the study, the animals were allocated by computer randomization to the negative control group (A), test groups (C and D), positive control groups (E and F) or reserve group (G), as presented below:

Group	Treatment	Number of males
A	negative control	6
C	C6AL, 1500 mg.kg-bw^{-1}	6
D	C6AL, 750 mg.kg-bw^{-1}	6
E	2-AAF, (positive control)	2
F	DMN, (positive control)	2
G	reserve	8

Each group was uniquely identified by a letter code and a colour code. Within each group the animals were allocated a computer reference number (even number) and individually identified by ear mark on 7 November 2005. Two of the reserve rats (G) were added to group E, of which one (G102) was used to replace animal E68. Group B was allocated to the UDS test that was performed simultaneously with 2-N,N-diethylaminoethylmethacrylate (see also TNO report V6657/01).

Since in one day only a limited number of animals can be handled in the UDS test, the exposure of the animals to the test substance were done on several consecutive days. Dosing was performed on 7, 8, 9 and 10 November 2005 and sacrifices on 8, 9, 10 and 11 November 2005. Signs of reactions to treatment were recorded at least once between 1-4 h post-treatment.

4.3.4 *Preparation of hepatocyte cultures*

At 2-4 h and 12-16 h after exposure, negative control animals and test substance animals were sacrificed for isolation of hepatocytes. Rats treated with DMN and 2-AAF were sacrificed at 2-4 h and 12-16 h, respectively. Hepatocytes were isolated from the liver using the perfusion technique described by Williams *et al.* (1977) with minor modifications. Briefly, the liver of each rat was perfused *in situ* with a Ca- and Mg-free HEPES buffer (0.01 M) whilst under Nembutal anaesthesia, followed by an *in vitro* perfusion with a HEPES-buffered (0.1 M) collagenase solution.

After isolation, the dissociated cells were incubated for 5-10 minutes in a shaking water bath at 37 °C. Thereafter, they were filtered over a 200 mesh nylon filter, centrifuged and resuspended in WEC medium [= Williams medium E complete, which consisted of Williams medium E containing Glutamax supplemented with 10 % foetal calf serum

and gentamycin (50 μg.mL^{-1})]. Cell counts were made with a haemocytometer. The viability of the hepatocytes was determined by trypan blue exclusion to confirm viability greater than 50 % (Table 1).

Suspensions containing 5 x 10^5 cells.mL^{-1} were prepared in WEC medium. Aliquots (one ml) were seeded onto Thermanox 25 mm round plastic cover slips in 35 mm 6-well dishes, which already contained 1 mL of WEC medium. The cultures were then incubated at 37 °C in a humidified incubator containing *ca* 5 % CO_2 and 95 % air to allow cells to attach.

4.3.5 *Labelling of cultures*

Within 2-4 h after seeding of the cells (except for cells from 5 animals (see also section 3), the medium was removed and cells were washed twice with 2 mL Williams E medium leaving only attached viable cells. Immediately after washing, 2 mL WEI [= Williams E medium incomplete, which consisted of Williams medium E containing Glutamax, gentamycin (50 μg.mL^{-1}), hydrocortison (36 μg.mL^{-1}) and insuline (8 μg.mL^{-1})] and 10 μCi [methyl-^{3}H]thymidine (specific activity: *ca* 40-60 Ci.mmol^{-1} [*ca* 1.5-2.2 TBq.mmol^{-1}]) per mL were added to the cultures.

The hepatocyte cultures were incubated for *ca* 18 hours at 37 °C. Thereafter, the cover slips were rinsed in three successive washes of Williams E medium. The cover slips were then immersed in 2 mL of a 1 % sodium citrate solution for 10 min to allow the cells to swell. Subsequently, cells were fixed in three 30 minute changes of absolute ethanol-acetic acid (3:1), air-dried, and mounted on glass slides.

4.3.6 *Autoradiography*

Slides were processed for autoradiography using Kodak NTB emulsion. After 7 and 14 days of exposure at < –18 °C three slides per animal were developed with Kodak D19, fixed in Kodak Fixer and washed with water. They were then stained with haematoxylin and eosin and embedded in Pertex. Two slides of each animal at the better exposure duration were selected and coded by a qualified person not involved in analysing the slides to enable 'blind' scoring. The remaining slide of each animal was kept as reserve.

4.3.7 *UDS analysis: grain counting and calculations*

An Artek electronic counter with microscopic attachment (Zeiss microscope connected to a high resolution TV camera) was used for grain counting in nuclei and cytoplasm. Fifty cells (randomly selected from top to bottom) per slide and 2 slides per animal were counted. Cells with abnormal morphology (pyknotic or lysed nuclei) or heavily-labelled S-phase cells were not counted. Cytoplasmic labelling was determined by a duplicate count of a nucleus-sized area of cytoplasm adjacent to the nucleus. The mean cytoplasmic count was subtracted from the nuclear count to give the net nuclear grains (NNG). To set the non-specific (background) labelling on the slides, a triplicate count of a nuclei-sized area outside the cells was determined; the background labeling was between 4 and 18 grains. These values were not used in further calculations.

A cut-off of 5 NNG was chosen as a conservative estimate of whether any particular cell is in repair.

The following calculations were made for each slide:
a) the population average NNG ± S.D. (cell to cell)
b) the percent of cells in repair
c) the population average NNG ± S.D. for the subpopulation of cells that are in repair

The following calculations were made for each animal:
a) the population average NNG ± S.D. (slide to slide)
b) the percent of cells in repair ± S.D. (slide to slide)

The following calculations were made for each test group:
a) the population average NNG ± S.D. (animal to animal)
b) the percent of cells in repair ± S.D. (animal to animal)

4.4 Analysis of the results

The study is considered valid if the positive control gives a positive response and if the negative controls give a clear negative response.

A response at a data point is considered positive if the population average is ≥ 5 NNG, and if at least 20 % of the cells are "in repair".

A response is considered weakly positive if the population average is between 0 to 5 NNG.

A test substance is considered to cause DNA damage and induce DNA repair in liver cells if at least one dose level at one time point results in an increase in the mean NNG compared to the vehicle control.

A test substance is considered non-genotoxic under the conditions of the test if all dose levels and time points produce 0 ≤ NNG.

Both numerical significance and biological relevance are considered together in the evaluation.

5 Results

Three animals in the high level dose group (C34, C36 and C38) showed sluggish behavior and piloerection 12 hours post-treatment, indicating that this dose level is close to the toxic dose level. Two animals in the low level dose group (D50 and D52) showed piloerection; the latter animal (D52) had also some blood in its jejunum. Five animals in the test substance groups (C34, C36, C38, D50 and D52) had soft yellowish faeces, which is probably the result of using corn oil as vehicle. In addition, one animal in a positive control group (E68) showed sluggish behavior and piloerection; its thorax was filled with dosing solution and the oesophagus and lungs were disrupted, most likely due to incorrect dosing by gavage. This animal has, therefore, been replaced by one of the reserve animals (G102). Information on dosing day, body weights, post-treatment times, and viabilities of the hepatocyte cultures is presented in Table 1. The mean results of the unscheduled DNA synthesis test are summarized in Table 2 (group data) and Table 3 (slide data). Detailed results per slide are presented in Appendix 1.

Both the test substance 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol (at both dose levels) and the negative control, corn oil, yielded ≤ 0 net nuclear grains (NNG). The test substance did not induce > 5 NNG. These data demonstrate that 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol did not induce unscheduled DNA synthesis in rat hepatocytes.

The positive controls DMN and 2-AAF induced > 5 NNG with at least 20 % of the cells in repair. This expected increase in unscheduled DNA synthesis indicates the validity of the test system.

6 Conclusion

It is concluded that the test substance 3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanol did not induce unscheduled DNA synthesis in liver cells of male rats, exposed to the test substance by gavage, under the conditions used in this study.

7 References

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Tables

Table 1 – Dosing days, body weights, post-treatment times and viability of hepatocyte cultures

Group	animal no.	dosing day (dd/mm/yyyy)	Body weight (g)	post-treatment time* (hours:minutes)	viability (in %) of hepatocyte cultures
A Vehicle control	A2	7/11/2005	262.8	13:22	76
	A4	7/11/2005	283.6	13:43	73
	A6	9/11/2005	277.5	13:11	81
	A10	8/11/2005	276.1	2:26	84
	A12	8/11/2005	286.5	2:54	91
	A14	10/11/2005	301.5	2:20	90
C Test substance 1500 mg.kg-bw^{-1}	C34	8/11/2005	283.2	13:35	82
	C36	8/11/2005	282.1	13:54	80
	C38	9/11/2005	297.7	15:03	84
	C42	9/11/2005	288.2	2:09	87
	C44	9/11/2005	294.5	2:31	92
	C46	10/11/2005	297.6	2:15	92
D Test substance 750 mg.kg-bw^{-1}	D50	8/11/2005	279.4	14:49	77
	D52	8/11/2005	298.1	15:06	89
	D54	9/11/2005	264.8	2:32	82
	D58	9/11/2005	300.8	3:42	86
	D60	10/11/2005	304.7	2:29	90
	D62	9/11/2005	292.1	15:24	86
E 2-AAF 50 mg.kg-bw^{-1}	E66	7/11/2005	287.7	14:58	93
	E68	9/11/2005**	284.5	13:19	88
	G102	10/11/2005	297.6	13:15	94
	G106	10/11/2005***	293.6	-	-
F DMN 10 mg.kg-bw^{-1}	F82	8/11/2005	280.0	2:46	78
	F84	9/11/2005	284.5	4:01	89

* time between start of exposure and start of perfusion
** slides not analysed, because E68 was replaced by G102 due to incorrect dosing by gavage
*** liver not perfused, not needed for analysis

Table 2 – Summary of unscheduled DNA synthesis data (group data)

Animal	NUC	sd	CYT	sd	NNG	sd	%IR	sd	NGIR	sd
Negative control 12-16h										
A2	27.21	4.79	39.00	6.33	-11.79	1.53	2.00	2.83	2.75	3.89
A4	24.15	5.90	36.02	5.01	-11.87	0.89	0.00	0.00	0.00	0.00
A6	25.17	3.72	35.92	5.13	-10.75	1.41	0.00	0.00	0.00	0.00
Average	**25.51**	**8.46**	**36.98**	**9.56**	**-11.47**	**2.27**	**0.67**	**2.83**	**0.92**	**3.89**
Negative control 2-4h										
A10	32.07	3.72	41.94	3.61	-9.87	0.11	0.00	0.00	0.00	0.00
A12	26.40	1.27	34.49	1.55	-8.09	0.28	0.00	0.00	0.00	0.00
A14	25.48	0.11	34.58	1.25	-9.10	1.36	0.00	0.00	0.00	0.00
Average	**27.98**	**3.93**	**37.00**	**4.12**	**-9.02**	**1.40**	**0.00**	**0.00**	**0.00**	**0.00**
Test substance; 1500mg/kg, 12-16h										
C34	32.16	0.85	46.24	1.52	-13.62	0.02	2.00	0.00	2.75	3.89
C36	31.63	5.25	42.08	4.87	-10.45	0.37	2.00	0.00	6.00	0.71
C38	27.13	1.99	44.19	3.02	-17.06	1.03	0.00	0.00	0.00	0.00
Average	**30.31**	**5.68**	**44.17**	**5.93**	**-13.71**	**1.09**	**1.33**	**0.00**	**2.92**	**3.95**
Test substance; 1500mg/kg, 2-4h										
C42	25.87	0.24	37.32	2.68	-11.45	2.44	1.00	1.41	3.75	5.30
C44	24.95	0.33	38.04	0.76	-13.09	1.09	2.00	2.83	3.13	4.42
C46	27.57	2.90	34.77	4.65	-7.20	1.75	1.00	1.41	5.25	7.42
Average	**26.13**	**2.93**	**36.71**	**5.42**	**-10.58**	**3.20**	**1.33**	**3.46**	**4.04**	**10.14**
Test substance; 750mg/kg, 12-16h										
D50	31.16	1.05	47.49	1.29	-16.33	0.24	0.00	0.00	0.00	0.00
D52	25.52	2.23	40.91	0.15	-15.39	2.09	2.00	0.00	7.75	0.35
D62	31.96	0.45	49.52	1.44	-17.56	0.98	0.00	0.00	0.00	0.00
Average	**29.55**	**2.51**	**45.97**	**1.93**	**-16.42**	**2.32**	**0.67**	**0.00**	**2.58**	**0.35**
Test substance; 750mg/kg, 2-4h										
D54	31.52	0.68	40.55	0.80	-9.03	1.48	2.00	2.83	3.63	5.13
D58	27.25	3.61	38.19	5.69	-10.94	2.08	0.00	0.00	0.00	0.00
D60	25.12	0.82	34.75	2.40	-9.63	1.58	1.00	1.41	2.75	3.89
Average	**27.96**	**3.76**	**37.83**	**6.22**	**-9.87**	**3.00**	**1.00**	**3.16**	**2.13**	**6.43**
Positive control 2-AAF 12-16h										
E66	54.85	6.18	39.41	4.06	15.44	2.12	91.00	4.24	16.78	1.48
G102	51.74	6.36	38.99	1.86	12.76	4.50	81.00	15.56	15.20	2.76
Average	**53.30**	**8.87**	**39.20**	**4.46**	**14.10**	**4.98**	**86.00**	**16.12**	**15.99**	**3.14**
Positive control DMN 2-4h										
F82	53.05	2.14	38.24	0.42	14.81	2.56	95.00	1.41	15.44	2.61
F84	47.03	3.21	34.21	3.11	12.82	0.10	88.00	2.83	14.28	0.40
Average	**50.04**	**3.86**	**36.23**	**3.14**	**13.82**	**2.56**	**91.50**	**3.16**	**14.86**	**2.64**

NUC : mean nuclear grain count
CYT : mean cytoplasm grain count
NNG : mean net grains per nucleus
%IR : percent of cells in repair
NGIR : mean nuclear grain count of cells in repair
sd : standard deviation

Table 3 – Individual results per slide of the unscheduled DNA synthesis test

	NUC	CYT	NNG	%IR	NGIR
Negative control 12-16h					
A2-2	23.82	34.52	-10.70	4.00	5.50
A2-3	30.60	43.47	-12.87	0.00	0.00
mean	**27.21**	**39.00**	**-11.79**	**2.00**	**2.75**
sd	**4.79**	**6.33**	**1.53**	**2.83**	**3.89**
A4-1	28.32	39.56	-11.24	0.00	0.00
A4-3	19.98	32.48	-12.50	0.00	0.00
mean	**24.15**	**36.02**	**-11.87**	**0.00**	**0.00**
sd	**5.90**	**5.01**	**0.89**	**0.00**	**0.00**
A6-2	22.54	32.29	-9.75	0.00	0.00
A6-3	27.80	39.55	-11.75	0.00	0.00
mean	**25.17**	**35.92**	**-10.75**	**0.00**	**0.00**
sd	**3.72**	**5.13**	**1.41**	**0.00**	**0.00**
Negative control 2-4h					
A10-2	29.44	39.39	-9.95	0.00	0.00
A10-3	34.70	44.49	-9.79	0.00	0.00
mean	**32.07**	**41.94**	**-9.87**	**0.00**	**0.00**
sd	**3.72**	**3.61**	**0.11**	**0.00**	**0.00**
A12-1	27.30	35.58	-8.28	0.00	0.00
A12-3	25.50	33.39	-7.89	0.00	0.00
mean	**26.40**	**34.49**	**-8.09**	**0.00**	**0.00**
sd	**1.27**	**1.55**	**0.28**	**0.00**	**0.00**
A14-1	25.40	35.46	-10.06	0.00	0.00
A14-3	25.56	33.69	-8.13	0.00	0.00
mean	**25.48**	**34.58**	**-9.10**	**0.00**	**0.00**
sd	**0.11**	**1.25**	**1.36**	**0.00**	**0.00**
Test substance; 1500mg/kg, 12-16h					
C34-2	31.56	45.16	-13.60	2.00	5.50
C34-3	32.76	47.31	-13.63	2.00	0.00
mean	**32.16**	**46.24**	**-13.62**	**2.00**	**2.75**
sd	**0.85**	**1.52**	**0.02**	**0.00**	**3.89**
C36-1	35.34	45.52	-10.18	2.00	5.50
C36-3	27.92	38.63	-10.71	2.00	6.50
mean	**31.63**	**42.08**	**-10.45**	**2.00**	**6.00**
sd	**5.25**	**4.87**	**0.37**	**0.00**	**0.71**
C38-2	28.54	46.32	-17.78	0.00	0.00
C38-3	25.72	42.05	-16.33	0.00	0.00
mean	**27.13**	**44.19**	**-17.06**	**0.00**	**0.00**
sd	**1.99**	**3.02**	**1.03**	**0.00**	**0.00**

NUC : mean nuclear grain count
CYT : mean cytoplasm grain count
NNG : mean net grains per nucleus
%IR : percent of cells in repair
NGIR : mean nuclear grain count of cells in repair
sd : standard deviation

Table 3 – Individual results per slide of the unscheduled DNA synthesis test (continued)

	NUC	CYT	NNG	%IR	NGIR
Test substance; 1500mg/kg, 2-4h					
C42-1	26.04	39.21	-13.17	2.00	7.50
C42-2	25.70	35.42	-9.72	0.00	0.00
mean	**25.87**	**37.32**	**-11.45**	**1.00**	**3.75**
sd	**0.24**	**2.68**	**2.44**	**1.41**	**5.30**
C44-1	24.72	38.58	-13.86	4.00	6.25
C44-2	25.18	37.50	-12.32	0.00	0.00
mean	**24.95**	**38.04**	**-13.09**	**2.00**	**3.13**
sd	**0.33**	**0.76**	**1.09**	**2.83**	**4.42**
C46-2	25.52	31.48	-5.96	2.00	10.50
C46-3	29.62	38.06	-8.44	0.00	0.00
mean	**27.57**	**34.77**	**-7.20**	**1.00**	**5.25**
sd	**2.90**	**4.65**	**1.75**	**1.41**	**7.42**
Test substance; 750mg/kg, 12-16h					
D50-2	31.90	48.40	-16.50	0.00	0.00
D50-3	30.42	46.58	-16.16	0.00	0.00
mean	**31.16**	**47.49**	**-16.33**	**0.00**	**0.00**
sd	**1.05**	**1.29**	**0.24**	**0.00**	**0.00**
D52-2	27.10	41.01	-13.91	2.00	8.00
D52-3	23.94	40.80	-16.86	2.00	7.50
mean	**25.52**	**40.91**	**-15.39**	**2.00**	**7.75**
sd	**2.23**	**0.15**	**2.09**	**0.00**	**0.35**
D62-2	32.28	50.53	-18.25	0.00	0.00
D62-3	31.64	48.50	-16.86	0.00	0.00
mean	**31.96**	**49.52**	**-17.56**	**0.00**	**0.00**
sd	**0.45**	**1.44**	**0.98**	**0.00**	**0.00**
Test substance; 750mg/kg, 2-4h					
D54-1	31.04	41.11	-10.07	0.00	0.00
D54-2	32.00	39.98	-7.98	4.00	7.25
mean	**31.52**	**40.55**	**-9.03**	**2.00**	**3.63**
sd	**0.68**	**0.80**	**1.48**	**2.83**	**5.13**
D58-1	29.80	42.21	-12.41	0.00	0.00
D58-3	24.70	34.17	-9.47	0.00	0.00
mean	**27.25**	**38.19**	**-10.94**	**0.00**	**0.00**
sd	**3.61**	**5.69**	**2.08**	**0.00**	**0.00**
D60-1	25.70	36.45	-10.75	0.00	0.00
D60-3	24.54	33.05	-8.51	2.00	5.50
mean	**25.12**	**34.75**	**-9.63**	**1.00**	**2.75**
sd	**0.82**	**2.40**	**1.58**	**1.41**	**3.89**

NUC : mean nuclear grain count .
CYT : mean cytoplasm grain count
NNG : mean net grains per nucleus
%IR : percent of cells in repair
NGIR : mean nuclear grain count of cells in repair
sd : standard deviation

Table 3 – Individual results per slide of the unscheduled DNA synthesis test (continued)

	NUC	CYT	NNG	%IR	NGIR
Positive control 2-AAF 12-16h					
E66-2	59.22	42.28	16.94	94.00	17.83
E66-3	50.48	36.54	13.94	88.00	15.73
mean	**54.85**	**39.41**	**15.44**	**91.00**	**16.78**
sd	**6.18**	**4.06**	**2.12**	**4.24**	**1.48**
G102-1	47.24	37.67	9.57	70.00	13.24
G102-3	56.24	40.30	15.94	92.00	17.15
mean	**51.74**	**38.99**	**12.76**	**81.00**	**15.20**
sd	**6.36**	**1.86**	**4.50**	**15.56**	**2.76**
Positive control DMN 2-4h					
F82-2	51.54	38.54	13.00	94.00	13.59
F82-3	54.56	37.94	16.62	96.00	17.28
mean	**53.05**	**38.24**	**14.81**	**95.00**	**15.44**
sd	**2.14**	**0.42**	**2.56**	**1.41**	**2.61**
F84-1	44.76	32.01	12.75	90.00	14.00
F84-3	49.30	36.41	12.89	86.00	14.56
mean	**47.03**	**34.21**	**12.82**	**88.00**	**14.28**
sd	**3.21**	**3.11**	**0.10**	**2.83**	**0.40**

NUC : mean nuclear grain count
CYT : mean cytoplasm grain count
NNG : mean net grains per nucleus
%IR : percent of cells in repair
NGIR : mean nuclear grain count of cells in repair
sd : standard deviation

Appendix 1 – Individual data of UDS slides

Study number	6657/02
Slide number	A2-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	27	39	38	38.5	-11.5
2	18	22	26	24.0	-6.0
3	24	30	39	34.5	-10.5
4	19	40	41	40.5	-21.5
5	27	32	41	36.5	-9.5
6	26	32	35	33.5	-7.5
7	17	38	31	34.5	-17.5
8	16	24	33	28.5	-12.5
9	27	20	23	21.5	5.5
10	20	31	34	32.5	-12.5
11	18	28	20	24.0	-6.0
12	19	24	25	24.5	-5.5
13	22	27	35	31.0	-9.0
14	29	30	36	33.0	-4.0
15	26	43	52	47.5	-21.5
16	20	29	29	29.0	-9.0
17	16	21	22	21.5	-5.5
18	14	20	26	23.0	-9.0
19	28	53	45	49.0	-21.0
20	19	36	24	30.0	-11.0
21	29	35	47	41.0	-12.0
22	34	46	39	42.5	-8.5
23	23	41	31	36.0	-13.0
24	17	49	43	46.0	-29.0
25	23	56	51	53.5	-30.5
26	31	50	47	48.5	-17.5
27	22	38	37	37.5	-15.5
28	24	32	30	31.0	-7.0
29	13	33	38	35.5	-22.5
30	25	33	34	33.5	-8.5
31	19	30	26	28.0	-9.0
32	24	24	22	23.0	1.0
33	28	37	37	37.0	-9.0
34	23	34	41	37.5	-14.5
35	22	41	39	40.0	-18.0
36	27	26	49	37.5	-10.5
37	20	26	31	28.5	-8.5
38	34	52	48	50.0	-16.0
39	24	30	24	27.0	-3.0
40	22	37	35	36.0	-14.0
41	25	21	36	28.5	-3.5
42	23	29	24	26.5	-3.5
43	25	21	18	19.5	5.5
44	24	38	43	40.5	-16.5
45	24	38	36	37.0	-13.0
46	28	39	41	40.0	-12.0
47	36	38	39	38.5	-2.5
48	26	34	31	32.5	-6.5
49	31	34	37	35.5	-4.5
50	33	41	41	41.0	-8.0

mean nuclear counts	23.82	sd	5.26
mean cytoplasm counts	34.52	sd	8.05
mean net grains per nucleus	-10.70	sd	7.33
% cells in repair	4%		
mean net grains of cells in repair	5.50	sd	0.00

Study number	6657/02
Slide number	A2-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	30	41	47	44.0	-14.0
2	29	42	47	44.5	-15.5
3	22	27	27	27.0	-5.0
4	24	38	26	32.0	-8.0
5	23	47	37	42.0	-19.0
6	23	44	53	48.5	-25.5
7	33	44	39	41.5	-8.5
8	38	44	58	51.0	-13.0
9	20	38	33	35.5	-15.5
10	44	44	48	46.0	-2.0
11	20	32	30	31.0	-11.0
12	44	54	58	56.0	-12.0
13	23	46	62	54.0	-31.0
14	34	53	42	47.5	-13.5
15	38	47	43	45.0	-7.0
16	32	42	47	44.5	-12.5
17	29	44	52	48.0	-19.0
18	49	57	53	55.0	-6.0
19	39	54	50	52.0	-13.0
20	29	36	41	38.5	-9.5
21	37	44	38	41.0	-4.0
22	17	44	35	39.5	-22.5
23	24	23	31	27.0	-3.0
24	30	33	32	32.5	-2.5
25	19	43	44	43.5	-24.5
26	17	36	34	35.0	-18.0
27	19	38	32	35.0	-16.0
28	23	35	32	33.5	-10.5
29	36	47	40	43.5	-7.5
30	34	46	44	45.0	-11.0
31	22	42	38	40.0	-18.0
32	36	52	50	51.0	-15.0
33	36	35	41	38.0	-2.0
34	39	49	54	51.5	-12.5
35	31	47	42	44.5	-13.5
36	45	59	59	59.0	-14.0
37	40	58	58	58.0	-18.0
38	30	40	52	46.0	-16.0
39	35	63	58	60.5	-25.5
40	30	47	40	43.5	-13.5
41	33	41	40	40.5	-7.5
42	34	45	45	45.0	-11.0
43	45	57	40	48.5	-3.5
44	33	42	44	43.0	-10.0
45	26	39	38	38.5	-12.5
46	28	38	38	38.0	-10.0
47	29	29	30	29.5	-0.5
48	26	42	36	39.0	-13.0
49	30	49	43	46.0	-16.0
50	23	53	56	54.5	-31.5

mean nuclear counts	30.60	sd	7.96
mean cytoplasm counts	43.47	sd	8.16
mean net grains per nucleus	-12.87	sd	7.11
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A4-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	28	48	47	47.5	-19.5
2	30	37	37	37.0	-7.0
3	19	36	39	37.5	-18.5
4	28	40	42	41.0	-13.0
5	33	36	32	34.0	-1.0
6	28	34	36	35.0	-7.0
7	34	37	37	37.0	-3.0
8	21	40	37	38.5	-17.5
9	32	29	28	28.5	3.5
10	30	43	49	46.0	-16.0
11	24	35	48	41.5	-17.5
12	34	43	42	42.5	-8.5
13	27	30	28	29.0	-2.0
14	28	55	44	49.5	-21.5
15	31	40	34	37.0	-6.0
16	25	31	38	34.5	-9.5
17	28	29	30	29.5	-1.5
18	26	39	29	34.0	-8.0
19	39	46	55	50.5	-11.5
20	27	43	41	42.0	-15.0
21	25	32	28	30.0	-5.0
22	40	43	41	42.0	-2.0
23	32	40	43	41.5	-9.5
24	32	41	48	44.5	-12.5
25	30	56	46	51.0	-21.0
26	38	52	63	57.5	-19.5
27	21	30	33	31.5	-10.5
28	39	38	40	39.0	0.0
29	27	32	33	32.5	-5.5
30	20	40	46	43.0	-23.0
31	32	55	50	52.5	-20.5
32	21	40	33	36.5	-15.5
33	20	47	42	44.5	-24.5
34	39	41	35	38.0	1.0
35	33	47	46	46.5	-13.5
36	20	44	43	43.5	-23.5
37	35	41	46	43.5	-8.5
38	32	46	43	44.5	-12.5
39	25	29	33	31.0	-6.0
40	29	29	28	28.5	0.5
41	34	41	45	43.0	-9.0
42	21	33	39	36.0	-15.0
43	25	49	45	47.0	-22.0
44	23	36	37	36.5	-13.5
45	26	37	29	33.0	-7.0
46	23	28	33	30.5	-7.5
47	23	47	34	40.5	-17.5
48	26	40	34	37.0	-11.0
49	21	37	41	39.0	-18.0
50	32	42	42	42.0	-10.0

mean nuclear counts	28.32	sd	5.69
mean cytoplasm counts	39.56	sd	6.77
mean net grains per nucleus	-11.24	sd	7.29
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A4-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	15	33	23	28.0	-13.0
2	19	21	28	24.5	-5.5
3	17	27	28	27.5	-10.5
4	19	38	28	33.0	-14.0
5	17	40	34	37.0	-20.0
6	22	27	33	30.0	-8.0
7	23	30	35	32.5	-9.5
8	25	37	29	33.0	-8.0
9	22	46	39	42.5	-20.5
10	14	22	24	23.0	-9.0
11	15	30	30	30.0	-15.0
12	27	31	36	33.5	-6.5
13	11	20	25	22.5	-11.5
14	11	21	23	22.0	-11.0
15	14	20	19	19.5	-5.5
16	25	44	38	41.0	-16.0
17	25	36	43	39.5	-14.5
18	32	47	51	49.0	-17.0
19	13	34	31	32.5	-19.5
20	16	27	43	35.0	-19.0
21	20	39	38	38.5	-18.5
22	23	36	35	35.5	-12.5
23	23	32	32	32.0	-9.0
24	21	26	28	27.0	-6.0
25	17	28	37	32.5	-15.5
26	19	25	28	26.5	-7.5
27	16	23	23	23.0	-7.0
28	22	32	32	32.0	-10.0
29	19	41	45	43.0	-24.0
30	23	33	35	34.0	-11.0
31	22	31	33	32.0	-10.0
32	31	32	35	33.5	-2.5
33	25	44	38	41.0	-16.0
34	16	36	25	30.5	-14.5
35	23	20	31	25.5	-2.5
36	11	28	21	24.5	-13.5
37	14	38	43	40.5	-26.5
38	20	30	19	24.5	-4.5
39	24	36	41	38.5	-14.5
40	17	43	38	40.5	-23.5
41	25	33	32	32.5	-7.5
42	18	24	23	23.5	-5.5
43	18	28	31	29.5	-11.5
44	29	45	53	49.0	-20.0
45	13	27	28	27.5	-14.5
46	28	35	39	37.0	-9.0
47	25	30	37	33.5	-8.5
48	19	30	31	30.5	-11.5
49	18	29	29	29.0	-11.0
50	18	47	36	41.5	-23.5

mean nuclear counts	19.98	sd	5.13
mean cytoplasm counts	32.48	sd	6.93
mean net grains per nucleus	-12.50	sd	5.81
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A6-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	22	40	34	37.0	-15.0
2	16	25	23	24.0	-8.0
3	23	28	20	24.0	-1.0
4	21	38	24	31.0	-10.0
5	26	41	30	35.5	-9.5
6	24	39	40	39.5	-15.5
7	12	19	18	18.5	-6.5
8	14	32	29	30.5	-16.5
9	15	35	37	36.0	-21.0
10	30	27	31	29.0	1.0
11	15	20	30	25.0	-10.0
12	23	26	27	26.5	-3.5
13	30	36	34	35.0	-5.0
14	26	31	38	34.5	-8.5
15	17	20	29	24.5	-7.5
16	21	24	25	24.5	-3.5
17	25	32	42	37.0	-12.0
18	23	34	23	28.5	-5.5
19	14	18	22	20.0	-6.0
20	19	34	30	32.0	-13.0
21	17	26	21	23.5	-6.5
22	29	50	44	47.0	-18.0
23	23	22	27	24.5	-1.5
24	23	40	45	42.5	-19.5
25	24	38	37	37.5	-13.5
26	26	26	28	27.0	-1.0
27	25	29	28	28.5	-3.5
28	36	42	42	42.0	-6.0
29	15	24	25	24.5	-9.5
30	19	34	38	36.0	-17.0
31	16	27	27	27.0	-11.0
32	29	39	38	38.5	-9.5
33	25	41	41	41.0	-16.0
34	23	37	27	32.0	-9.0
35	21	31	35	33.0	-12.0
36	27	31	37	34.0	-7.0
37	14	31	33	32.0	-18.0
38	10	19	22	20.5	-10.5
39	21	27	24	25.5	-4.5
40	22	43	31	37.0	-15.0
41	22	28	32	30.0	-8.0
42	28	26	38	32.0	-4.0
43	21	40	39	39.5	-18.5
44	27	47	40	43.5	-16.5
45	26	39	37	38.0	-12.0
46	28	30	30	30.0	-2.0
47	27	40	48	44.0	-17.0
48	31	35	43	39.0	-8.0
49	24	32	28	30.0	-6.0
50	32	46	39	42.5	-10.5

mean nuclear counts	22.54	sd	5.66
mean cytoplasm counts	32.29	sd	7.02
mean net grains per nucleus	-9.75	sd	5.54
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A6-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	20	39	40	39.5	-19.5
2	21	32	26	29.0	-8.0
3	28	41	34	37.5	-9.5
4	35	37	27	32.0	3.0
5	42	61	48	54.5	-12.5
6	33	45	34	39.5	-6.5
7	27	27	40	33.5	-6.5
8	18	24	29	26.5	-8.5
9	35	60	42	51.0	-16.0
10	33	42	45	43.5	-10.5
11	20	46	39	42.5	-22.5
12	23	31	36	33.5	-10.5
13	31	31	30	30.5	0.5
14	38	39	31	35.0	3.0
15	26	48	44	46.0	-20.0
16	43	61	78	69.5	-26.5
17	32	42	50	46.0	-14.0
18	25	45	30	37.5	-12.5
19	30	46	45	45.5	-15.5
20	29	47	57	52.0	-23.0
21	32	53	36	44.5	-12.5
22	23	28	34	31.0	-8.0
23	26	46	38	42.0	-16.0
24	23	43	44	43.5	-20.5
25	18	21	29	25.0	-7.0
26	20	31	37	34.0	-14.0
27	36	34	41	37.5	-1.5
28	20	24	24	24.0	-4.0
29	21	38	24	31.0	-10.0
30	22	26	24	25.0	-3.0
31	28	37	49	43.0	-15.0
32	23	36	52	44.0	-21.0
33	27	39	30	34.5	-7.5
34	19	27	29	28.0	-9.0
35	25	34	28	31.0	-6.0
36	24	44	45	44.5	-20.5
37	28	32	27	29.5	-1.5
38	32	53	46	49.5	-17.5
39	20	33	39	36.0	-16.0
40	24	52	29	40.5	-16.5
41	41	54	45	49.5	-8.5
42	27	58	56	57.0	-30.0
43	31	39	24	31.5	-0.5
44	37	49	49	49.0	-12.0
45	30	51	51	51.0	-21.0
46	28	43	47	45.0	-17.0
47	32	47	53	50.0	-18.0
48	29	32	36	34.0	-5.0
49	27	41	35	38.0	-11.0
50	28	24	36	30.0	-2.0

mean nuclear counts	27.80	sd	6.34
mean cytoplasm counts	39.55	sd	9.50
mean net grains per nucleus	-11.75	sd	7.63
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A10-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	23	47	39	43.0	-20.0
2	29	37	38	37.5	-8.5
3	33	52	42	47.0	-14.0
4	25	40	43	41.5	-16.5
5	18	35	34	34.5	-16.5
6	26	49	45	47.0	-21.0
7	22	47	34	40.5	-18.5
8	28	33	45	39.0	-11.0
9	26	47	39	43.0	-17.0
10	22	29	35	32.0	-10.0
11	31	68	54	61.0	-30.0
12	38	42	46	44.0	-6.0
13	42	56	51	53.5	-11.5
14	33	37	38	37.5	-4.5
15	28	33	42	37.5	-9.5
16	38	45	42	43.5	-5.5
17	27	34	29	31.5	-4.5
18	17	28	24	26.0	-9.0
19	28	37	31	34.0	-6.0
20	31	39	36	37.5	-6.5
21	25	43	37	40.0	-15.0
22	39	40	40	40.0	-1.0
23	50	54	51	52.5	-2.5
24	27	32	36	34.0	-7.0
25	21	25	28	26.5	-5.5
26	32	45	44	44.5	-12.5
27	52	73	57	65.0	-13.0
28	34	43	41	42.0	-8.0
29	33	48	39	43.5	-10.5
30	25	38	36	37.0	-12.0
31	32	35	37	36.0	-4.0
32	25	29	34	31.5	-6.5
33	35	39	42	40.5	-5.5
34	30	43	30	36.5	-6.5
35	18	32	31	31.5	-13.5
36	36	38	42	40.0	-4.0
37	26	38	36	37.0	-11.0
38	33	37	49	43.0	-10.0
39	34	35	39	37.0	-3.0
40	30	43	45	44.0	-14.0
41	22	28	28	28.0	-6.0
42	23	35	38	36.5	-13.5
43	41	58	44	51.0	-10.0
44	27	41	40	40.5	-13.5
45	21	36	36	36.0	-15.0
46	31	25	34	29.5	1.5
47	31	40	32	36.0	-5.0
48	27	30	35	32.5	-5.5
49	17	22	27	24.5	-7.5
50	30	48	36	42.0	-12.0

mean nuclear counts	29.44	sd	7.50
mean cytoplasm counts	39.39	sd	8.03
mean net grains per nucleus	-9.95	sd	5.78
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A10-3

Cell number	Grain counts				Net grains per nucleus
	NUC	CYT 1	CYT 2	mean CYT	
1	27	39	35	37.0	-10.0
2	47	72	57	64.5	-17.5
3	33	45	40	42.5	-9.5
4	33	47	49	48.0	-15.0
5	37	37	38	37.5	-0.5
6	48	42	55	48.5	-0.5
7	35	47	38	42.5	-7.5
8	42	42	47	44.5	-2.5
9	43	51	49	50.0	-7.0
10	40	44	49	46.5	-6.5
11	34	50	47	48.5	-14.5
12	39	41	48	44.5	-5.5
13	28	45	56	50.5	-22.5
14	30	47	54	50.5	-20.5
15	34	38	43	40.5	-6.5
16	34	40	45	42.5	-8.5
17	35	51	52	51.5	-16.5
18	36	37	50	43.5	-7.5
19	45	54	55	54.5	-9.5
20	41	33	41	37.0	4.0
21	33	39	43	41.0	-8.0
22	27	32	42	37.0	-10.0
23	32	45	42	43.5	-11.5
24	32	47	43	45.0	-13.0
25	38	42	43	42.5	-4.5
26	29	41	46	43.5	-14.5
27	23	29	39	34.0	-11.0
28	24	48	41	44.5	-20.5
29	40	64	74	69.0	-29.0
30	33	50	47	48.5	-15.5
31	35	38	35	36.5	-1.5
32	38	38	43	40.5	-2.5
33	29	36	31	33.5	-4.5
34	33	39	38	38.5	-5.5
35	40	43	44	43.5	-3.5
36	38	37	35	36.0	2.0
37	32	35	40	37.5	-5.5
38	27	39	42	40.5	-13.5
39	26	42	46	44.0	-18.0
40	40	45	52	48.5	-8.5
41	48	53	55	54.0	-6.0
42	32	47	53	50.0	-18.0
43	34	37	36	36.5	-2.5
44	32	38	39	38.5	-6.5
45	32	37	42	39.5	-7.5
46	31	37	36	36.5	-5.5
47	34	59	43	51.0	-17.0
48	26	52	50	51.0	-25.0
49	48	42	46	44.0	4.0
50	28	46	56	51.0	-23.0

mean nuclear counts	34.70	sd	6.31
mean cytoplasm counts	44.49	sd	7.17
mean net grains per nucleus	-9.79	sd	7.50
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A12-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	25	32	21	26.5	-1.5
2	33	39	36	37.5	-4.5
3	25	30	29	29.5	-4.5
4	25	30	31	30.5	-5.5
5	27	27	27	27.0	0.0
6	32	38	43	40.5	-8.5
7	23	32	34	33.0	-10.0
8	28	39	32	35.5	-7.5
9	17	29	36	32.5	-15.5
10	28	37	41	39.0	-11.0
11	17	32	31	31.5	-14.5
12	25	29	23	26.0	-1.0
13	26	42	32	37.0	-11.0
14	29	43	36	39.5	-10.5
15	32	40	37	38.5	-6.5
16	37	62	52	57.0	-20.0
17	26	38	42	40.0	-14.0
18	37	34	38	36.0	1.0
19	23	37	41	39.0	-16.0
20	27	28	33	30.5	-3.5
21	29	32	38	35.0	-6.0
22	34	44	40	42.0	-8.0
23	33	36	37	36.5	-3.5
24	29	35	33	34.0	-5.0
25	26	33	34	33.5	-7.5
26	29	32	36	34.0	-5.0
27	17	32	38	35.0	-18.0
28	25	34	25	29.5	-4.5
29	26	32	30	31.0	-5.0
30	21	33	33	33.0	-12.0
31	38	40	34	37.0	1.0
32	29	33	35	34.0	-5.0
33	22	39	42	40.5	-18.5
34	31	45	41	43.0	-12.0
35	39	40	49	44.5	-5.5
36	27	43	48	45.5	-18.5
37	24	45	41	43.0	-19.0
38	24	33	33	33.0	-9.0
39	33	35	33	34.0	-1.0
40	27	34	30	32.0	-5.0
41	42	45	43	44.0	-2.0
42	32	41	32	36.5	-4.5
43	23	36	33	34.5	-11.5
44	17	19	21	20.0	-3.0
45	14	26	33	29.5	-15.5
46	28	32	41	36.5	-8.5
47	26	39	35	37.0	-11.0
48	22	29	41	35.0	-13.0
49	30	42	41	41.5	-11.5
50	26	27	29	28.0	-2.0

mean nuclear counts	27.30	sd	5.91
mean cytoplasm counts	35.58	sd	6.11
mean net grains per nucleus	-8.28	sd	5.67
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A12-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	31	29	40	34.5	-3.5
2	39	37	44	40.5	-1.5
3	26	40	40	40.0	-14.0
4	26	32	34	33.0	-7.0
5	23	29	37	33.0	-10.0
6	25	27	22	24.5	0.5
7	28	28	31	29.5	-1.5
8	39	51	50	50.5	-11.5
9	19	28	27	27.5	-8.5
10	24	37	36	36.5	-12.5
11	18	37	36	36.5	-18.5
12	23	26	23	24.5	-1.5
13	28	31	38	34.5	-6.5
14	19	23	24	23.5	-4.5
15	16	33	37	35.0	-19.0
16	19	17	27	22.0	-3.0
17	21	26	25	25.5	-4.5
18	26	37	32	34.5	-8.5
19	28	34	35	34.5	-6.5
20	22	24	31	27.5	-5.5
21	18	21	26	23.5	-5.5
22	30	30	42	36.0	-6.0
23	23	39	26	32.5	-9.5
24	35	38	30	34.0	1.0
25	19	39	42	40.5	-21.5
26	31	45	29	37.0	-6.0
27	23	34	32	33.0	-10.0
28	32	30	34	32.0	0.0
29	29	41	32	36.5	-7.5
30	28	54	58	56.0	-28.0
31	33	42	42	42.0	-9.0
32	23	38	29	33.5	-10.5
33	21	25	24	24.5	-3.5
34	23	25	33	29.0	-6.0
35	30	48	34	41.0	-11.0
36	35	32	47	39.5	-4.5
37	22	39	36	37.5	-15.5
38	19	29	24	26.5	-7.5
39	26	26	27	26.5	-0.5
40	29	34	33	33.5	-4.5
41	30	36	32	34.0	-4.0
42	21	27	24	25.5	-4.5
43	23	30	25	27.5	-4.5
44	33	53	35	44.0	-11.0
45	29	34	33	33.5	-4.5
46	24	25	18	21.5	2.5
47	17	29	28	28.5	-11.5
48	20	30	32	31.0	-11.0
49	25	42	50	46.0	-21.0
50	24	33	39	36.0	-12.0

mean nuclear counts	25.50	sd	5.60
mean cytoplasm counts	33.39	sd	7.24
mean net grains per nucleus	-7.89	sd	6.21
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A14-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	34	52	39	45.5	-11.5
2	26	45	46	45.5	-19.5
3	34	40	37	38.5	-4.5
4	28	41	57	49.0	-21.0
5	20	43	46	44.5	-24.5
6	35	52	51	51.5	-16.5
7	28	41	43	42.0	-14.0
8	33	33	38	35.5	-2.5
9	21	26	28	27.0	-6.0
10	27	38	41	39.5	-12.5
11	34	45	38	41.5	-7.5
12	19	34	35	34.5	-15.5
13	24	40	38	39.0	-15.0
14	24	32	31	31.5	-7.5
15	27	46	44	45.0	-18.0
16	17	30	36	33.0	-16.0
17	26	31	44	37.5	-11.5
18	30	28	29	28.5	1.5
19	21	28	39	33.5	-12.5
20	20	22	35	28.5	-8.5
21	25	44	49	46.5	-21.5
22	24	33	44	38.5	-14.5
23	19	27	24	25.5	-6.5
24	27	43	43	43.0	-16.0
25	38	46	38	42.0	-4.0
26	21	33	34	33.5	-12.5
27	14	34	40	37.0	-23.0
28	25	24	32	28.0	-3.0
29	21	33	36	34.5	-13.5
30	23	38	34	36.0	-13.0
31	18	26	30	28.0	-10.0
32	23	34	28	31.0	-8.0
33	16	25	31	28.0	-12.0
34	28	28	31	29.5	-1.5
35	24	28	28	28.0	-4.0
36	28	31	34	32.5	-4.5
37	23	36	39	37.5	-14.5
38	29	27	24	25.5	3.5
39	34	35	43	39.0	-5.0
40	27	38	41	39.5	-12.5
41	24	26	33	29.5	-5.5
42	26	30	26	28.0	-2.0
43	27	26	33	29.5	-2.5
44	29	34	45	39.5	-10.5
45	25	36	33	34.5	-9.5
46	33	35	29	32.0	1.0
47	29	36	39	37.5	-8.5
48	33	35	36	35.5	-2.5
49	15	34	25	29.5	-14.5
50	14	21	26	23.5	-9.5

mean nuclear counts	25.40	sd	5.80
mean cytoplasm counts	35.46	sd	6.74
mean net grains per nucleus	-10.06	sd	6.55
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	A14-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	27	35	33	34.0	-7.0
2	24	26	32	29.0	-5.0
3	28	34	33	33.5	-5.5
4	21	26	30	28.0	-7.0
5	23	24	24	24.0	-1.0
6	25	35	25	30.0	-5.0
7	18	29	32	30.5	-12.5
8	26	25	28	26.5	-0.5
9	32	40	47	43.5	-11.5
10	34	32	33	32.5	1.5
11	23	31	30	30.5	-7.5
12	27	41	45	43.0	-16.0
13	17	32	26	29.0	-12.0
14	29	28	31	29.5	-0.5
15	22	34	37	35.5	-13.5
16	27	39	37	38.0	-11.0
17	27	34	31	32.5	-5.5
18	24	25	37	31.0	-7.0
19	33	31	33	32.0	1.0
20	16	34	33	33.5	-17.5
21	38	34	38	36.0	2.0
22	24	39	34	36.5	-12.5
23	34	36	37	36.5	-2.5
24	20	31	32	31.5	-11.5
25	20	38	29	33.5	-13.5
26	30	38	33	35.5	-5.5
27	31	37	49	43.0	-12.0
28	23	39	38	38.5	-15.5
29	24	27	29	28.0	-4.0
30	17	18	21	19.5	-2.5
31	20	27	31	29.0	-9.0
32	20	22	27	24.5	-4.5
33	24	40	41	40.5	-16.5
34	23	28	35	31.5	-8.5
35	27	40	38	39.0	-12.0
36	19	27	38	32.5	-13.5
37	24	27	38	32.5	-8.5
38	18	37	33	35.0	-17.0
39	28	30	38	34.0	-6.0
40	34	45	42	43.5	-9.5
41	17	25	30	27.5	-10.5
42	30	43	34	38.5	-8.5
43	28	37	36	36.5	-8.5
44	29	35	44	39.5	-10.5
45	35	39	43	41.0	-6.0
46	35	43	43	43.0	-8.0
47	33	36	40	38.0	-5.0
48	22	33	37	35.0	-13.0
49	30	36	37	36.5	-6.5
50	18	20	25	22.5	-4.5

mean nuclear counts	25.56	sd	5.67
mean cytoplasm counts	33.69	sd	5.62
mean net grains per nucleus	-8.13	sd	4.97
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C34-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	35	43	46	44.5	-9.5
2	19	44	44	44.0	-25.0
3	33	60	55	57.5	-24.5
4	23	31	25	28.0	-5.0
5	28	39	34	36.5	-8.5
6	31	54	35	44.5	-13.5
7	23	55	60	57.5	-34.5
8	33	50	46	48.0	-15.0
9	38	64	55	59.5	-21.5
10	25	60	54	57.0	-32.0
11	24	61	50	55.5	-31.5
12	35	48	47	47.5	-12.5
13	41	39	49	44.0	-3.0
14	16	34	46	40.0	-24.0
15	26	42	43	42.5	-16.5
16	31	56	62	59.0	-28.0
17	30	36	42	39.0	-9.0
18	29	37	44	40.5	-11.5
19	38	48	39	43.5	-5.5
20	50	52	59	55.5	-5.5
21	40	58	57	57.5	-17.5
22	38	52	46	49.0	-11.0
23	42	51	51	51.0	-9.0
24	25	25	20	22.5	2.5
25	47	65	58	61.5	-14.5
26	32	48	42	45.0	-13.0
27	37	44	43	43.5	-6.5
28	26	39	47	43.0	-17.0
29	31	47	40	43.5	-12.5
30	34	47	43	45.0	-11.0
31	33	36	35	35.5	-2.5
32	34	46	59	52.5	-18.5
33	32	40	47	43.5	-11.5
34	39	30	37	33.5	5.5
35	27	55	56	55.5	-28.5
36	42	41	54	47.5	-5.5
37	33	45	46	45.5	-12.5
38	27	35	30	32.5	-5.5
39	28	43	39	41.0	-13.0
40	39	38	44	41.0	-2.0
41	35	55	56	55.5	-20.5
42	34	38	50	44.0	-10.0
43	23	31	30	30.5	-7.5
44	17	41	35	38.0	-21.0
45	29	53	43	48.0	-19.0
46	27	39	39	39.0	-12.0
47	31	38	36	37.0	-6.0
48	25	49	42	45.5	-20.5
49	40	52	54	53.0	-13.0
50	23	30	38	34.0	-11.0

mean nuclear counts	31.56	sd	7.30
mean cytoplasm counts	45.16	sd	8.80
mean net grains per nucleus	-13.60	sd	8.80
% cells in repair	2%		
mean net grains of cells in repair	5.50	sd	0.00

Study number	6657/02
Slide number	C34-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	25	36	46	41.0	-16.0
2	35	51	34	42.5	-7.5
3	29	56	58	57.0	-28.0
4	25	54	44	49.0	-24.0
5	25	45	36	40.5	-15.5
6	28	40	50	45.0	-17.0
7	37	60	54	57.0	-20.0
8	32	49	53	51.0	-19.0
9	32	67	68	67.5	-35.5
10	37	39	37	38.0	-1.0
11	42	46	44	45.0	-3.0
12	28	60	56	58.0	-30.0
13	29	68	51	59.5	-30.5
14	38	63	62	62.5	-24.5
15	36	59	58	58.5	-22.5
16	38	41	52	46.5	-8.5
17	24	46	45	45.5	-21.5
18	40	60	49	54.5	-14.5
19	35	43	41	42.0	-7.0
20	26	34	49	41.5	-15.5
21	46	78	86	82.0	-36.0
22	29	41	39	40.0	-11.0
23	28	40	32	36.0	-8.0
24	31	41	56	48.5	-17.5
25	29	50	38	44.0	-15.0
26	36	38	48	43.0	-7.0
27	41	59	53	56.0	-15.0
28	36	55	53	54.0	-18.0
29	33	49	49	49.0	-16.0
30	31	47	43	45.0	-14.0
31	37	37	43	40.0	-3.0
32	27	29	38	33.5	-6.5
33	47	44	56	50.0	-3.0
34	26	36	39	37.5	-11.5
35	33	41	40	40.5	-7.5
36	30	44	42	43.0	-13.0
37	26	39	34	36.5	-10.5
38	19	15	18	16.5	2.5
39	37	31	52	41.5	-4.5
40	20	47	41	44.0	-24.0
41	43	47	37	42.0	1.0
42	24	38	43	40.5	-16.5
43	35	40	47	43.5	-8.5
44	27	40	36	38.0	-11.0
45	29	51	52	51.5	-22.5
46	36	57	51	54.0	-18.0
47	36	52	51	51.5	-15.5
48	44	58	57	57.5	-13.5
49	42	61	66	63.5	-21.5
50	39	43	60	51.5	-12.5

mean nuclear counts	32.76	sd	6.67
mean cytoplasm counts	47.52	sd	10.36
mean net grains per nucleus	-14.76	sd	8.85
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C36-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	51	47	53	50.0	1.0
2	33	42	38	40.0	-7.0
3	48	52	42	47.0	1.0
4	38	39	40	39.5	-1.5
5	38	57	38	47.5	-9.5
6	29	52	50	51.0	-22.0
7	33	44	49	46.5	-13.5
8	33	47	47	47.0	-14.0
9	42	34	48	41.0	1.0
10	25	36	43	39.5	-14.5
11	27	39	40	39.5	-12.5
12	29	48	44	46.0	-17.0
13	42	48	62	55.0	-13.0
14	28	42	39	40.5	-12.5
15	34	53	46	49.5	-15.5
16	29	31	31	31.0	-2.0
17	43	43	45	44.0	-1.0
18	11	29	40	34.5	-23.5
19	33	34	47	40.5	-7.5
20	25	36	32	34.0	-9.0
21	36	48	42	45.0	-9.0
22	32	40	28	34.0	-2.0
23	41	51	47	49.0	-8.0
24	30	40	39	39.5	-9.5
25	36	37	42	39.5	-3.5
26	26	30	35	32.5	-6.5
27	33	37	50	43.5	-10.5
28	32	41	47	44.0	-12.0
29	42	48	45	46.5	-4.5
30	33	55	58	56.5	-23.5
31	24	47	54	50.5	-26.5
32	32	47	42	44.5	-12.5
33	36	47	38	42.5	-6.5
34	52	98	100	99.0	-47.0
35	41	59	62	60.5	-19.5
36	39	69	51	60.0	-21.0
37	45	59	48	53.5	-8.5
38	21	33	39	36.0	-15.0
39	30	49	39	44.0	-14.0
40	32	46	43	44.5	-12.5
41	38	53	48	50.5	-12.5
42	42	46	41	43.5	-1.5
43	39	44	47	45.5	-6.5
44	37	46	55	50.5	-13.5
45	47	49	34	41.5	5.5
46	37	36	34	35.0	2.0
47	35	43	44	43.5	-8.5
48	52	48	51	49.5	2.5
49	36	60	44	52.0	-16.0
50	40	35	37	36.0	4.0

mean nuclear counts	35.34	sd	8.05
mean cytoplasm counts	45.52	sd	10.28
mean net grains per nucleus	-10.18	sd	9.27
% cells in repair	2%		
mean net grains of cells in repair	5.50	sd	0.00

Study number	6657/02
Slide number	C36-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	24	44	35	39.5	-15.5
2	28	35	49	42.0	-14.0
3	22	46	40	43.0	-21.0
4	27	33	35	34.0	-7.0
5	25	48	39	43.5	-18.5
6	30	34	45	39.5	-9.5
7	36	54	47	50.5	-14.5
8	32	43	49	46.0	-14.0
9	30	33	20	26.5	3.5
10	31	34	31	32.5	-1.5
11	33	36	47	41.5	-8.5
12	27	40	33	36.5	-9.5
13	20	44	34	39.0	-19.0
14	21	30	37	33.5	-12.5
15	19	34	39	36.5	-17.5
16	25	39	37	38.0	-13.0
17	26	41	32	36.5	-10.5
18	29	42	54	48.0	-19.0
19	24	37	38	37.5	-13.5
20	29	28	22	25.0	4.0
21	38	44	36	40.0	-2.0
22	41	48	42	45.0	-4.0
23	25	41	34	37.5	-12.5
24	29	38	40	39.0	-10.0
25	25	36	35	35.5	-10.5
26	32	33	33	33.0	-1.0
27	27	39	40	39.5	-12.5
28	29	41	39	40.0	-11.0
29	24	46	41	43.5	-19.5
30	22	33	32	32.5	-10.5
31	20	38	36	37.0	-17.0
32	30	41	41	41.0	-11.0
33	24	27	35	31.0	-7.0
34	25	33	39	36.0	-11.0
35	31	46	42	44.0	-13.0
36	27	41	28	34.5	-7.5
37	41	44	41	42.5	-1.5
38	27	43	36	39.5	-12.5
39	22	37	50	43.5	-21.5
40	30	33	36	34.5	-4.5
41	26	50	40	45.0	-19.0
42	27	53	33	43.0	-16.0
43	28	32	37	34.5	-6.5
44	30	37	41	39.0	-9.0
45	40	34	33	33.5	6.5
46	36	56	61	58.5	-22.5
47	27	38	29	33.5	-6.5
48	36	50	40	45.0	-9.0
49	25	29	41	35.0	-10.0
50	14	31	22	26.5	-12.5

mean nuclear counts	27.92	sd	5.66
mean cytoplasm counts	38.63	sd	6.11
mean net grains per nucleus	-10.71	sd	6.61
% cells in repair	2%		
mean net grains of cells in repair	6.50	sd	0.00

Study number	6657/02
Slide number	C38-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	24	35	29	32.0	-8.0
2	20	35	39	37.0	-17.0
3	32	46	39	42.5	-10.5
4	36	51	40	45.5	-9.5
5	27	48	44	46.0	-19.0
6	40	41	39	40.0	0.0
7	19	46	40	43.0	-24.0
8	32	47	53	50.0	-18.0
9	27	34	40	37.0	-10.0
10	27	46	41	43.5	-16.5
11	21	47	40	43.5	-22.5
12	20	20	22	21.0	-1.0
13	21	30	27	28.5	-7.5
14	23	36	40	38.0	-15.0
15	25	46	37	41.5	-16.5
16	34	63	74	68.5	-34.5
17	27	49	48	48.5	-21.5
18	20	64	43	53.5	-33.5
19	24	46	28	37.0	-13.0
20	32	44	46	45.0	-13.0
21	22	35	36	35.5	-13.5
22	20	40	51	45.5	-25.5
23	35	43	50	46.5	-11.5
24	26	52	55	53.5	-27.5
25	29	52	38	45.0	-16.0
26	21	47	60	53.5	-32.5
27	36	47	50	48.5	-12.5
28	22	53	44	48.5	-26.5
29	30	63	53	58.0	-28.0
30	36	51	52	51.5	-15.5
31	39	68	58	63.0	-24.0
32	27	46	43	44.5	-17.5
33	29	68	57	62.5	-33.5
34	27	41	45	43.0	-16.0
35	34	49	41	45.0	-11.0
36	44	67	75	71.0	-27.0
37	38	52	54	53.0	-15.0
38	33	59	49	54.0	-21.0
39	21	52	65	58.5	-37.5
40	32	48	34	41.0	-9.0
41	24	49	40	44.5	-20.5
42	44	52	42	47.0	-3.0
43	24	45	30	37.5	-13.5
44	28	44	51	47.5	-19.5
45	31	50	46	48.0	-17.0
46	29	40	43	41.5	-12.5
47	29	62	49	55.5	-26.5
48	26	41	40	40.5	-14.5
49	30	41	47	44.0	-14.0
50	30	47	47	47.0	-17.0

mean nuclear counts	28.54	sd	6.40
mean cytoplasm counts	46.32	sd	9.30
mean net grains per nucleus	-17.78	sd	8.53
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C38-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	22	36	46	41.0	-19.0
2	21	36	36	36.0	-15.0
3	14	33	37	35.0	-21.0
4	19	23	30	26.5	-7.5
5	22	37	35	36.0	-14.0
6	23	52	46	49.0	-26.0
7	28	46	50	48.0	-20.0
8	25	33	36	34.5	-9.5
9	15	32	32	32.0	-17.0
10	24	50	31	40.5	-16.5
11	32	39	30	34.5	-2.5
12	26	44	45	44.5	-18.5
13	29	38	43	40.5	-11.5
14	22	40	32	36.0	-14.0
15	31	35	50	42.5	-11.5
16	23	41	44	42.5	-19.5
17	17	34	36	35.0	-18.0
18	21	38	40	39.0	-18.0
19	30	57	46	51.5	-21.5
20	24	34	36	35.0	-11.0
21	15	36	19	27.5	-12.5
22	22	35	30	32.5	-10.5
23	21	40	39	39.5	-18.5
24	42	46	38	42.0	0.0
25	27	52	50	51.0	-24.0
26	32	59	53	56.0	-24.0
27	26	43	47	45.0	-19.0
28	30	53	50	51.5	-21.5
29	33	39	36	37.5	-4.5
30	25	32	44	38.0	-13.0
31	26	36	38	37.0	-11.0
32	27	41	43	42.0	-15.0
33	15	29	29	29.0	-14.0
34	31	46	49	47.5	-16.5
35	19	27	37	32.0	-13.0
36	38	76	61	68.5	-30.5
37	26	43	33	38.0	-12.0
38	23	50	44	47.0	-24.0
39	31	51	47	49.0	-18.0
40	23	45	38	41.5	-18.5
41	33	47	52	49.5	-16.5
42	26	49	42	45.5	-19.5
43	21	48	54	51.0	-30.0
44	35	47	45	46.0	-11.0
45	29	43	51	47.0	-18.0
46	27	46	36	41.0	-14.0
47	18	39	38	38.5	-20.5
48	43	56	53	54.5	-11.5
49	22	43	53	48.0	-26.0
50	32	51	49	50.0	-18.0

mean nuclear counts	25.72	sd	6.52
mean cytoplasm counts	42.05	sd	8.08
mean net grains per nucleus	-16.33	sd	6.25
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C42-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	29	43	34	38.5	-9.5
2	24	31	33	32.0	-8.0
3	29	51	43	47.0	-18.0
4	32	39	53	46.0	-14.0
5	29	45	50	47.5	-18.5
6	30	44	42	43.0	-13.0
7	31	49	31	40.0	-9.0
8	25	44	40	42.0	-17.0
9	28	39	38	38.5	-10.5
10	25	18	17	17.5	7.5
11	13	23	17	20.0	-7.0
12	22	53	62	57.5	-35.5
13	25	50	39	44.5	-19.5
14	28	43	44	43.5	-15.5
15	20	33	20	26.5	-6.5
16	32	50	48	49.0	-17.0
17	17	19	25	22.0	-5.0
18	21	21	16	18.5	2.5
19	21	37	37	37.0	-16.0
20	19	34	37	35.5	-16.5
21	43	46	43	44.5	-1.5
22	30	50	42	46.0	-16.0
23	30	37	32	34.5	-4.5
24	22	37	27	32.0	-10.0
25	18	40	48	44.0	-26.0
26	31	33	33	33.0	-2.0
27	21	43	47	45.0	-24.0
28	25	52	43	47.5	-22.5
29	23	40	35	37.5	-14.5
30	32	48	47	47.5	-15.5
31	22	55	45	50.0	-28.0
32	26	54	47	50.5	-24.5
33	35	39	39	39.0	-4.0
34	34	47	33	40.0	-6.0
35	33	41	43	42.0	-9.0
36	22	38	38	38.0	-16.0
37	24	34	32	33.0	-9.0
38	31	45	33	39.0	-8.0
39	29	34	37	35.5	-6.5
40	25	34	46	40.0	-15.0
41	28	48	38	43.0	-15.0
42	34	44	41	42.5	-8.5
43	28	50	47	48.5	-20.5
44	11	31	30	30.5	-19.5
45	29	53	45	49.0	-20.0
46	29	54	40	47.0	-18.0
47	19	35	35	35.0	-16.0
48	23	31	35	33.0	-10.0
49	29	42	35	38.5	-9.5
50	16	26	32	29.0	-13.0

mean nuclear counts	26.04	sd	6.06
mean cytoplasm counts	39.21	sd	8.65
mean net grains per nucleus	-13.17	sd	7.93
% cells in repair	2%		
mean net grains of cells in repair	7.50	sd	#DIV/0!

Study number	6657/02
Slide number	C42-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	22	25	27	26.0	-4.0
2	20	33	34	33.5	-13.5
3	26	41	58	49.5	-23.5
4	31	34	40	37.0	-6.0
5	23	31	38	34.5	-11.5
6	37	49	40	44.5	-7.5
7	24	35	36	35.5	-11.5
8	31	47	34	40.5	-9.5
9	26	32	28	30.0	-4.0
10	18	24	25	24.5	-6.5
11	26	35	41	38.0	-12.0
12	34	30	42	36.0	-2.0
13	28	36	37	36.5	-8.5
14	22	24	30	27.0	-5.0
15	29	40	45	42.5	-13.5
16	29	48	39	43.5	-14.5
17	28	30	39	34.5	-6.5
18	21	23	34	28.5	-7.5
19	22	36	43	39.5	-17.5
20	29	43	39	41.0	-12.0
21	33	37	52	44.5	-11.5
22	25	45	39	42.0	-17.0
23	39	48	46	47.0	-8.0
24	14	28	17	22.5	-8.5
25	31	34	29	31.5	-0.5
26	23	45	35	40.0	-17.0
27	24	39	36	37.5	-13.5
28	25	37	44	40.5	-15.5
29	28	56	70	63.0	-35.0
30	21	43	44	43.5	-22.5
31	25	28	29	28.5	-3.5
32	24	39	33	36.0	-12.0
33	30	39	48	43.5	-13.5
34	31	28	36	32.0	-1.0
35	17	18	19	18.5	-1.5
36	13	15	16	15.5	-2.5
37	20	38	28	33.0	-13.0
38	31	46	45	45.5	-14.5
39	19	32	23	27.5	-8.5
40	29	33	27	30.0	-1.0
41	24	33	28	30.5	-6.5
42	26	21	38	29.5	-3.5
43	19	21	27	24.0	-5.0
44	21	30	34	32.0	-11.0
45	27	39	33	36.0	-9.0
46	29	37	39	38.0	-9.0
47	23	29	38	33.5	-10.5
48	27	33	33	33.0	-6.0
49	38	36	37	36.5	1.5
50	23	30	37	33.5	-10.5

mean nuclear counts	25.70	sd	5.62
mean cytoplasm counts	35.42	sd	8.32
mean net grains per nucleus	-9.72	sd	6.61
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C44-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	17	44	37	40.5	-23.5
2	16	35	39	37.0	-21.0
3	23	37	35	36.0	-13.0
4	28	43	32	37.5	-9.5
5	21	33	30	31.5	-10.5
6	43	34	38	36.0	7.0
7	32	59	39	49.0	-17.0
8	37	53	47	50.0	-13.0
9	28	42	49	45.5	-17.5
10	30	53	52	52.5	-22.5
11	33	43	31	37.0	-4.0
12	29	54	39	46.5	-17.5
13	34	56	38	47.0	-13.0
14	27	44	46	45.0	-18.0
15	23	52	45	48.5	-25.5
16	23	51	45	48.0	-25.0
17	19	35	37	36.0	-17.0
18	17	37	38	37.5	-20.5
19	21	45	42	43.5	-22.5
20	22	26	34	30.0	-8.0
21	34	29	44	36.5	-2.5
22	26	42	36	39.0	-13.0
23	24	49	28	38.5	-14.5
24	22	42	48	45.0	-23.0
25	22	21	20	20.5	1.5
26	25	36	33	34.5	-9.5
27	24	33	36	34.5	-10.5
28	25	33	28	30.5	-5.5
29	18	34	37	35.5	-17.5
30	26	40	36	38.0	-12.0
31	30	52	41	46.5	-16.5
32	29	45	47	46.0	-17.0
33	22	30	46	38.0	-16.0
34	21	47	32	39.5	-18.5
35	28	45	43	44.0	-16.0
36	21	30	34	32.0	-11.0
37	20	37	34	35.5	-15.5
38	24	28	31	29.5	-5.5
39	20	31	35	33.0	-13.0
40	29	34	43	38.5	-9.5
41	20	40	48	44.0	-24.0
42	30	41	48	44.5	-14.5
43	16	36	27	31.5	-15.5
44	25	20	19	19.5	5.5
45	17	30	38	34.0	-17.0
46	33	35	39	37.0	-4.0
47	21	37	32	34.5	-13.5
48	13	37	35	36.0	-23.0
49	18	34	33	33.5	-15.5
50	30	46	44	45.0	-15.0

mean nuclear counts	24.72	sd	6.10
mean cytoplasm counts	38.58	sd	7.01
mean net grains per nucleus	-13.86	sd	7.35
% cells in repair	4%		
mean net grains of cells in repair	6.25	sd	1.06

Study number	6657/02
Slide number	C44-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	19	35	41	38.0	-19.0
2	25	43	44	43.5	-18.5
3	25	49	48	48.5	-23.5
4	26	33	46	39.5	-13.5
5	28	60	53	56.5	-28.5
6	18	33	34	33.5	-15.5
7	13	25	44	34.5	-21.5
8	20	41	41	41.0	-21.0
9	25	42	38	40.0	-15.0
10	27	26	35	30.5	-3.5
11	25	30	34	32.0	-7.0
12	30	51	31	41.0	-11.0
13	32	42	40	41.0	-9.0
14	29	39	33	36.0	-7.0
15	30	38	26	32.0	-2.0
16	16	31	30	30.5	-14.5
17	29	47	31	39.0	-10.0
18	23	30	30	30.0	-7.0
19	17	30	39	34.5	-17.5
20	25	47	39	43.0	-18.0
21	27	49	40	44.5	-17.5
22	31	34	49	41.5	-10.5
23	21	30	38	34.0	-13.0
24	31	42	43	42.5	-11.5
25	19	27	24	25.5	-6.5
26	13	28	26	27.0	-14.0
27	24	58	49	53.5	-29.5
28	37	54	35	44.5	-7.5
29	30	36	29	32.5	-2.5
30	27	27	37	32.0	-5.0
31	30	37	30	33.5	-3.5
32	28	39	44	41.5	-13.5
33	29	39	34	36.5	-7.5
34	31	49	41	45.0	-14.0
35	28	34	45	39.5	-11.5
36	23	27	32	29.5	-6.5
37	27	42	34	38.0	-11.0
38	26	29	37	33.0	-7.0
39	30	28	31	29.5	0.5
40	15	33	21	27.0	-12.0
41	23	27	38	32.5	-9.5
42	28	41	36	38.5	-10.5
43	27	32	24	28.0	-1.0
44	14	32	34	33.0	-19.0
45	24	29	35	32.0	-8.0
46	32	35	36	35.5	-3.5
47	33	45	52	48.5	-15.5
48	16	36	44	40.0	-24.0
49	28	54	43	48.5	-20.5
50	25	44	43	43.5	-18.5

mean nuclear counts	25.18	sd	5.65
mean cytoplasm counts	37.50	sd	6.96
mean net grains per nucleus	-12.32	sd	7.00
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	C46-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	28	37	27	32.0	-4.0
2	13	20	30	25.0	-12.0
3	23	30	35	32.5	-9.5
4	30	27	34	30.5	-0.5
5	24	27	24	25.5	-1.5
6	23	26	31	28.5	-5.5
7	38	32	23	27.5	10.5
8	21	18	25	21.5	-0.5
9	36	40	31	35.5	0.5
10	41	43	47	45.0	-4.0
11	30	30	38	34.0	-4.0
12	30	30	46	38.0	-8.0
13	30	37	37	37.0	-7.0
14	22	28	33	30.5	-8.5
15	20	25	38	31.5	-11.5
16	16	25	23	24.0	-8.0
17	26	32	26	29.0	-3.0
18	20	18	26	22.0	-2.0
19	38	36	32	34.0	4.0
20	23	35	39	37.0	-14.0
21	18	27	20	23.5	-5.5
22	25	36	37	36.5	-11.5
23	27	35	34	34.5	-7.5
24	25	38	26	32.0	-7.0
25	17	20	21	20.5	-3.5
26	32	30	39	34.5	-2.5
27	30	37	33	35.0	-5.0
28	31	38	39	38.5	-7.5
29	42	52	49	50.5	-8.5
30	31	42	40	41.0	-10.0
31	26	36	27	31.5	-5.5
32	31	41	40	40.5	-9.5
33	30	37	33	35.0	-5.0
34	35	27	34	30.5	4.5
35	24	34	37	35.5	-11.5
36	23	37	36	36.5	-13.5
37	14	34	34	34.0	-20.0
38	22	27	31	29.0	-7.0
39	19	30	28	29.0	-10.0
40	18	26	28	27.0	-9.0
41	18	22	21	21.5	-3.5
42	16	20	23	21.5	-5.5
43	15	23	19	21.0	-6.0
44	21	24	30	27.0	-6.0
45	30	28	32	30.0	0.0
46	24	24	35	29.5	-5.5
47	27	32	31	31.5	-4.5
48	16	36	33	34.5	-18.5
49	33	38	30	34.0	-1.0
50	24	25	31	28.0	-4.0

mean nuclear counts	25.52	sd	7.11
mean cytoplasm counts	31.48	sd	6.31
mean net grains per nucleus	-5.96	sd	5.40
% cells in repair	2%		
mean net grains of cells in repair	10.50	sd	0.00

Study number	6657/02
Slide number	C46-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	27	35	36	35.5	-8.5
2	28	35	41	38.0	-10.0
3	18	24	24	24.0	-6.0
4	35	34	35	34.5	0.5
5	33	37	46	41.5	-8.5
6	32	30	30	30.0	2.0
7	41	56	46	51.0	-10.0
8	22	32	45	38.5	-16.5
9	32	47	42	44.5	-12.5
10	36	43	48	45.5	-9.5
11	37	29	40	34.5	2.5
12	42	40	55	47.5	-5.5
13	43	41	37	39.0	4.0
14	28	41	41	41.0	-13.0
15	33	35	47	41.0	-8.0
16	34	25	36	30.5	3.5
17	11	21	32	26.5	-15.5
18	24	26	34	30.0	-6.0
19	46	49	48	48.5	-2.5
20	36	52	42	47.0	-11.0
21	32	44	34	39.0	-7.0
22	22	48	38	43.0	-21.0
23	30	43	39	41.0	-11.0
24	33	49	44	46.5	-13.5
25	29	44	43	43.5	-14.5
26	22	30	26	28.0	-6.0
27	15	20	23	21.5	-6.5
28	17	47	31	39.0	-22.0
29	28	53	37	45.0	-17.0
30	26	33	43	38.0	-12.0
31	22	28	40	34.0	-12.0
32	26	42	35	38.5	-12.5
33	34	38	31	34.5	-0.5
34	24	34	31	32.5	-8.5
35	29	32	30	31.0	-2.0
36	22	29	18	23.5	-1.5
37	14	22	29	25.5	-11.5
38	31	31	43	37.0	-6.0
39	27	36	33	34.5	-7.5
40	39	46	44	45.0	-6.0
41	30	35	41	38.0	-8.0
42	27	39	35	37.0	-10.0
43	31	30	27	28.5	2.5
44	30	32	41	36.5	-6.5
45	34	47	33	40.0	-6.0
46	30	42	46	44.0	-14.0
47	39	48	49	48.5	-9.5
48	43	46	47	46.5	-3.5
49	29	43	53	48.0	-19.0
50	28	51	43	47.0	-19.0

mean nuclear counts	29.62	sd	7.66
mean cytoplasm counts	38.06	sd	7.45
mean net grains per nucleus	-8.44	sd	6.31
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D50-2

	Grain counts				Net grains
Cell number	NUC	CYT 1	CYT 2	mean CYT	per nucleus
1	24	43	51	47.0	-23.0
2	35	54	51	52.5	-17.5
3	29	46	49	47.5	-18.5
4	21	43	44	43.5	-22.5
5	24	43	32	37.5	-13.5
6	20	39	36	37.5	-17.5
7	33	51	48	49.5	-16.5
8	30	40	49	44.5	-14.5
9	30	54	47	50.5	-20.5
10	26	52	53	52.5	-26.5
11	31	46	64	55.0	-24.0
12	38	49	60	54.5	-16.5
13	37	63	51	57.0	-20.0
14	29	69	59	64.0	-35.0
15	30	58	39	48.5	-18.5
16	29	36	48	42.0	-13.0
17	33	35	38	36.5	-3.5
18	33	45	37	41.0	-8.0
19	25	45	40	42.5	-17.5
20	37	50	40	45.0	-8.0
21	31	51	60	55.5	-24.5
22	31	38	48	43.0	-12.0
23	33	41	51	46.0	-13.0
24	30	44	52	48.0	-18.0
25	22	39	37	38.0	-16.0
26	39	49	52	50.5	-11.5
27	31	53	51	52.0	-21.0
28	31	58	55	56.5	-25.5
29	27	56	43	49.5	-22.5
30	29	50	43	46.5	-17.5
31	40	54	46	50.0	-10.0
32	33	32	40	36.0	-3.0
33	53	77	75	76.0	-23.0
34	25	36	38	37.0	-12.0
35	39	65	69	67.0	-28.0
36	31	44	51	47.5	-16.5
37	34	61	57	59.0	-25.0
38	27	48	55	51.5	-24.5
39	25	41	49	45.0	-20.0
40	38	36	45	40.5	-2.5
41	31	54	51	52.5	-21.5
42	42	42	50	46.0	-4.0
43	52	68	60	64.0	-12.0
44	23	35	53	44.0	-21.0
45	35	61	39	50.0	-15.0
46	33	51	41	46.0	-13.0
47	42	62	49	55.5	-13.5
48	38	44	49	46.5	-8.5
49	31	32	26	29.0	2.0
50	25	42	44	43.0	-18.0

mean nuclear counts	31.90	sd	6.86
mean cytoplasm counts	48.40	sd	8.60
mean net grains per nucleus	-16.50	sd	7.33
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D50-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	27	36	42	39.0	-12.0
2	22	34	40	37.0	-15.0
3	39	48	54	51.0	-12.0
4	34	49	50	49.5	-15.5
5	23	32	32	32.0	-9.0
6	28	27	35	31.0	-3.0
7	23	24	29	26.5	-3.5
8	45	61	54	57.5	-12.5
9	23	35	52	43.5	-20.5
10	34	56	52	54.0	-20.0
11	33	33	44	38.5	-5.5
12	34	38	44	41.0	-7.0
13	35	46	43	44.5	-9.5
14	25	39	51	45.0	-20.0
15	27	35	40	37.5	-10.5
16	22	40	36	38.0	-16.0
17	38	59	45	52.0	-14.0
18	32	51	41	46.0	-14.0
19	29	41	31	36.0	-7.0
20	22	40	38	39.0	-17.0
21	37	43	46	44.5	-7.5
22	33	35	37	36.0	-3.0
23	22	37	35	36.0	-14.0
24	25	47	38	42.5	-17.5
25	22	44	29	36.5	-14.5
26	22	48	48	48.0	-26.0
27	27	44	45	44.5	-17.5
28	31	55	52	53.5	-22.5
29	28	32	30	31.0	-3.0
30	39	55	52	53.5	-14.5
31	39	41	43	42.0	-3.0
32	37	47	61	54.0	-17.0
33	30	47	50	48.5	-18.5
34	21	42	46	44.0	-23.0
35	29	44	40	42.0	-13.0
36	27	44	54	49.0	-22.0
37	27	43	53	48.0	-21.0
38	37	45	49	47.0	-10.0
39	35	66	59	62.5	-27.5
40	38	60	61	60.5	-22.5
41	37	74	72	73.0	-36.0
42	39	60	54	57.0	-18.0
43	21	37	38	37.5	-16.5
44	29	28	34	31.0	-2.0
45	39	70	81	75.5	-36.5
46	43	70	59	64.5	-21.5
47	23	44	43	43.5	-20.5
48	29	54	48	51.0	-22.0
49	33	60	60	60.0	-27.0
50	27	77	71	74.0	-47.0

mean nuclear counts	30.42	sd	6.55
mean cytoplasm counts	46.58	sd	11.23
mean net grains per nucleus	-16.16	sd	9.13
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D52-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	23	48	48	48.0	-25.0
2	26	42	49	45.5	-19.5
3	26	45	53	49.0	-23.0
4	22	45	42	43.5	-21.5
5	25	40	41	40.5	-15.5
6	24	38	52	45.0	-21.0
7	47	45	50	47.5	-0.5
8	29	45	42	43.5	-14.5
9	36	42	37	39.5	-3.5
10	25	33	37	35.0	-10.0
11	24	39	37	38.0	-14.0
12	31	37	33	35.0	-4.0
13	27	33	28	30.5	-3.5
14	12	24	24	24.0	-12.0
15	27	42	39	40.5	-13.5
16	25	56	53	54.5	-29.5
17	38	30	30	30.0	8.0
18	27	52	44	48.0	-21.0
19	28	32	38	35.0	-7.0
20	33	49	48	48.5	-15.5
21	27	51	56	53.5	-26.5
22	28	28	34	31.0	-3.0
23	35	61	59	60.0	-25.0
24	47	55	56	55.5	-8.5
25	40	53	44	48.5	-8.5
26	35	34	33	33.5	1.5
27	20	30	36	33.0	-13.0
28	15	28	40	34.0	-19.0
29	17	39	45	42.0	-25.0
30	26	40	44	42.0	-16.0
31	26	38	36	37.0	-11.0
32	30	44	32	38.0	-8.0
33	24	38	38	38.0	-14.0
34	29	45	52	48.5	-19.5
35	38	54	58	56.0	-18.0
36	29	49	52	50.5	-21.5
37	29	32	46	39.0	-10.0
38	23	39	37	38.0	-15.0
39	20	28	39	33.5	-13.5
40	20	27	32	29.5	-9.5
41	29	49	48	48.5	-19.5
42	15	34	38	36.0	-21.0
43	33	38	38	38.0	-5.0
44	28	31	38	34.5	-6.5
45	16	40	31	35.5	-19.5
46	34	45	52	48.5	-14.5
47	24	38	32	35.0	-11.0
48	17	30	37	33.5	-16.5
49	16	42	36	39.0	-23.0
50	30	42	38	40.0	-10.0

mean nuclear counts	27.10	sd	7.57
mean cytoplasm counts	41.01	sd	7.97
mean net grains per nucleus	-13.91	sd	7.93
% cells in repair	2%		
mean net grains of cells in repair	8.00	sd	0.00

Study number	6657/02
Slide number	D52-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	32	39	46	42.5	-10.5
2	27	41	43	42.0	-15.0
3	24	45	47	46.0	-22.0
4	20	29	41	35.0	-15.0
5	24	36	38	37.0	-13.0
6	14	28	38	33.0	-19.0
7	20	35	24	29.5	-9.5
8	14	23	23	23.0	-9.0
9	14	34	28	31.0	-17.0
10	25	35	29	32.0	-7.0
11	26	36	48	42.0	-16.0
12	31	22	25	23.5	7.5
13	17	44	42	43.0	-26.0
14	23	34	40	37.0	-14.0
15	33	36	43	39.5	-6.5
16	17	40	39	39.5	-22.5
17	24	26	32	29.0	-5.0
18	27	39	46	42.5	-15.5
19	26	52	72	62.0	-36.0
20	18	43	45	44.0	-26.0
21	26	37	51	44.0	-18.0
22	23	28	31	29.5	-6.5
23	29	42	52	47.0	-18.0
24	22	32	44	38.0	-16.0
25	15	45	43	44.0	-29.0
26	20	43	40	41.5	-21.5
27	16	29	30	29.5	-13.5
28	20	47	34	40.5	-20.5
29	27	29	35	32.0	-5.0
30	31	28	44	36.0	-5.0
31	42	55	50	52.5	-10.5
32	26	54	55	54.5	-28.5
33	21	25	32	28.5	-7.5
34	37	63	46	54.5	-17.5
35	25	44	40	42.0	-17.0
36	40	61	63	62.0	-22.0
37	22	46	53	49.5	-27.5
38	26	50	47	48.5	-22.5
39	21	38	43	40.5	-19.5
40	22	37	51	44.0	-22.0
41	32	40	47	43.5	-11.5
42	30	52	59	55.5	-25.5
43	23	33	42	37.5	-14.5
44	26	49	56	52.5	-26.5
45	22	36	28	32.0	-10.0
46	22	34	41	37.5	-15.5
47	18	39	32	35.5	-17.5
48	13	43	39	41.0	-28.0
49	18	45	49	47.0	-29.0
50	26	42	51	46.5	-20.5

mean nuclear counts	23.94	sd	6.47
mean cytoplasm counts	40.80	sd	8.95
mean net grains per nucleus	-16.86	sd	8.22
% cells in repair	2%		
mean net grains of cells in repair	7.50	sd	0.00

Study number	6657/02
Slide number	D54-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	28	30	32	31.0	-3.0
2	31	53	56	54.5	-23.5
3	24	32	32	32.0	-8.0
4	31	48	38	43.0	-12.0
5	41	60	47	53.5	-12.5
6	26	42	53	47.5	-21.5
7	37	60	58	59.0	-22.0
8	25	46	36	41.0	-16.0
9	37	46	37	41.5	-4.5
10	33	35	41	38.0	-5.0
11	21	34	41	37.5	-16.5
12	43	44	42	43.0	0.0
13	31	28	47	37.5	-6.5
14	29	45	36	40.5	-11.5
15	29	58	46	52.0	-23.0
16	39	42	40	41.0	-2.0
17	45	52	47	49.5	-4.5
18	34	40	46	43.0	-9.0
19	29	42	37	39.5	-10.5
20	40	42	37	39.5	0.5
21	27	39	40	39.5	-12.5
22	26	41	45	43.0	-17.0
23	27	37	32	34.5	-7.5
24	33	40	35	37.5	-4.5
25	39	49	34	41.5	-2.5
26	38	59	60	59.5	-21.5
27	37	49	47	48.0	-11.0
28	23	37	46	41.5	-18.5
29	28	35	43	39.0	-11.0
30	27	32	34	33.0	-6.0
31	28	35	45	40.0	-12.0
32	31	45	45	45.0	-14.0
33	30	35	32	33.5	-3.5
34	32	54	38	46.0	-14.0
35	30	33	35	34.0	-4.0
36	19	35	29	32.0	-13.0
37	26	24	26	25.0	1.0
38	31	46	33	39.5	-8.5
39	37	42	38	40.0	-3.0
40	26	40	44	42.0	-16.0
41	28	40	30	35.0	-7.0
42	30	35	38	36.5	-6.5
43	29	34	35	34.5	-5.5
44	36	41	31	36.0	0.0
45	34	45	42	43.5	-9.5
46	27	37	42	39.5	-12.5
47	32	42	43	42.5	-10.5
48	33	50	44	47.0	-14.0
49	28	46	47	46.5	-18.5
50	27	41	32	36.5	-9.5

mean nuclear counts	31.04	sd	5.60
mean cytoplasm counts	41.11	sd	6.94
mean net grains per nucleus	-10.07	sd	6.52
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D54-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	25	34	34	34.0	-9.0
2	33	36	33	34.5	-1.5
3	32	44	54	49.0	-17.0
4	33	46	46	46.0	-13.0
5	38	41	41	41.0	-3.0
6	29	45	37	41.0	-12.0
7	36	39	37	38.0	-2.0
8	40	39	53	46.0	-6.0
9	28	36	38	37.0	-9.0
10	27	43	50	46.5	-19.5
11	44	42	32	37.0	7.0
12	51	63	58	60.5	-9.5
13	42	43	41	42.0	0.0
14	33	40	36	38.0	-5.0
15	23	44	34	39.0	-16.0
16	24	43	43	43.0	-19.0
17	34	39	38	38.5	-4.5
18	26	37	40	38.5	-12.5
19	24	25	23	24.0	0.0
20	36	34	44	39.0	-3.0
21	22	29	33	31.0	-9.0
22	21	27	29	28.0	-7.0
23	37	45	45	45.0	-8.0
24	35	35	49	42.0	-7.0
25	37	45	44	44.5	-7.5
26	35	56	60	58.0	-23.0
27	33	36	37	36.5	-3.5
28	28	33	38	35.5	-7.5
29	30	52	52	52.0	-22.0
30	31	37	42	39.5	-8.5
31	40	37	40	38.5	1.5
32	21	36	28	32.0	-11.0
33	36	34	32	33.0	3.0
34	29	39	35	37.0	-8.0
35	28	35	41	38.0	-10.0
36	27	35	48	41.5	-14.5
37	29	27	34	30.5	-1.5
38	39	58	42	50.0	-11.0
39	47	47	55	51.0	-4.0
40	21	27	35	31.0	-10.0
41	25	37	28	32.5	-7.5
42	46	35	42	38.5	7.5
43	33	39	37	38.0	-5.0
44	34	33	32	32.5	1.5
45	31	44	42	43.0	-12.0
46	25	38	50	44.0	-19.0
47	31	37	40	38.5	-7.5
48	34	43	38	40.5	-6.5
49	31	52	39	45.5	-14.5
50	26	42	36	39.0	-13.0

mean nuclear counts	32.00	sd	6.99
mean cytoplasm counts	39.98	sd	7.09
mean net grains per nucleus	-7.98	sd	6.85
% cells in repair	4%		
mean net grains of cells in repair	7.25	sd	0.35

Study number	6657/02
Slide number	D58-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	30	44	51	47.5	-17.5
2	19	38	28	33.0	-14.0
3	31	32	33	32.5	-1.5
4	42	66	61	63.5	-21.5
5	35	39	53	46.0	-11.0
6	30	53	55	54.0	-24.0
7	34	50	33	41.5	-7.5
8	23	40	42	41.0	-18.0
9	26	36	30	33.0	-7.0
10	40	52	39	45.5	-5.5
11	43	42	61	51.5	-8.5
12	30	49	47	48.0	-18.0
13	33	40	45	42.5	-9.5
14	37	38	45	41.5	-4.5
15	30	30	33	31.5	-1.5
16	31	32	35	33.5	-2.5
17	33	41	43	42.0	-9.0
18	22	30	25	27.5	-5.5
19	26	20	29	24.5	1.5
20	29	42	41	41.5	-12.5
21	26	40	57	48.5	-22.5
22	34	49	46	47.5	-13.5
23	26	55	41	48.0	-22.0
24	27	45	47	46.0	-19.0
25	30	39	37	38.0	-8.0
26	28	47	50	48.5	-20.5
27	23	28	23	25.5	-2.5
28	37	53	43	48.0	-11.0
29	25	42	34	38.0	-13.0
30	34	37	41	39.0	-5.0
31	25	36	50	43.0	-18.0
32	31	40	49	44.5	-13.5
33	26	36	41	38.5	-12.5
34	26	40	38	39.0	-13.0
35	29	50	47	48.5	-19.5
36	32	42	34	38.0	-6.0
37	26	51	44	47.5	-21.5
38	33	42	42	42.0	-9.0
39	33	49	38	43.5	-10.5
40	24	32	42	37.0	-13.0
41	28	40	47	43.5	-15.5
42	35	44	47	45.5	-10.5
43	36	54	38	46.0	-10.0
44	33	55	45	50.0	-17.0
45	24	33	36	34.5	-10.5
46	37	52	50	51.0	-14.0
47	35	48	41	44.5	-9.5
48	16	56	48	52.0	-36.0
49	23	39	39	39.0	-16.0
50	24	26	43	34.5	-10.5

mean nuclear counts	29.80	sd	5.69
mean cytoplasm counts	42.21	sd	7.57
mean net grains per nucleus	-12.41	sd	7.02
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D58-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	19	28	24	26.0	-7.0
2	16	24	27	25.5	-9.5
3	14	21	26	23.5	-9.5
4	30	35	37	36.0	-6.0
5	29	42	44	43.0	-14.0
6	23	42	28	35.0	-12.0
7	28	29	37	33.0	-5.0
8	29	28	29	28.5	0.5
9	19	31	31	31.0	-12.0
10	19	23	32	27.5	-8.5
11	25	24	30	27.0	-2.0
12	27	35	32	33.5	-6.5
13	26	24	22	23.0	3.0
14	22	36	37	36.5	-14.5
15	23	34	32	33.0	-10.0
16	22	31	31	31.0	-9.0
17	29	34	36	35.0	-6.0
18	16	29	28	28.5	-12.5
19	25	29	26	27.5	-2.5
20	26	26	29	27.5	-1.5
21	27	41	41	41.0	-14.0
22	18	25	25	25.0	-7.0
23	27	39	26	32.5	-5.5
24	23	32	20	26.0	-3.0
25	18	28	31	29.5	-11.5
26	23	26	35	30.5	-7.5
27	25	27	38	32.5	-7.5
28	21	29	38	33.5	-12.5
29	29	50	40	45.0	-16.0
30	28	41	38	39.5	-11.5
31	31	36	32	34.0	-3.0
32	23	42	43	42.5	-19.5
33	19	27	25	26.0	-7.0
34	19	29	42	35.5	-16.5
35	18	27	27	27.0	-9.0
36	27	31	30	30.5	-3.5
37	38	55	40	47.5	-9.5
38	26	29	35	32.0	-6.0
39	26	48	45	46.5	-20.5
40	25	42	44	43.0	-18.0
41	27	28	33	30.5	-3.5
42	27	39	40	39.5	-12.5
43	28	33	39	36.0	-8.0
44	23	30	35	32.5	-9.5
45	44	67	70	68.5	-24.5
46	36	46	44	45.0	-9.0
47	20	32	39	35.5	-15.5
48	27	28	32	30.0	-3.0
49	19	44	40	42.0	-23.0
50	26	34	42	38.0	-12.0

mean nuclear counts	24.70	sd	5.64
mean cytoplasm counts	34.17	sd	8.06
mean net grains per nucleus	-9.47	sd	5.86
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D60-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	28	36	22	29.0	-1.0
2	22	32	32	32.0	-10.0
3	13	25	32	28.5	-15.5
4	20	45	39	42.0	-22.0
5	28	35	43	39.0	-11.0
6	31	46	38	42.0	-11.0
7	37	38	37	37.5	-0.5
8	36	41	35	38.0	-2.0
9	23	36	42	39.0	-16.0
10	23	30	40	35.0	-12.0
11	33	36	40	38.0	-5.0
12	39	33	38	35.5	3.5
13	28	31	40	35.5	-7.5
14	19	27	24	25.5	-6.5
15	26	48	32	40.0	-14.0
16	19	21	28	24.5	-5.5
17	32	51	35	43.0	-11.0
18	15	33	42	37.5	-22.5
19	32	39	48	43.5	-11.5
20	22	37	30	33.5	-11.5
21	25	37	29	33.0	-8.0
22	27	38	51	44.5	-17.5
23	23	37	41	39.0	-16.0
24	19	29	37	33.0	-14.0
25	28	44	35	39.5	-11.5
26	29	45	51	48.0	-19.0
27	38	46	41	43.5	-5.5
28	23	28	26	27.0	-4.0
29	26	50	47	48.5	-22.5
30	21	37	35	36.0	-15.0
31	27	33	33	33.0	-6.0
32	23	34	43	38.5	-15.5
33	23	27	31	29.0	-6.0
34	25	28	34	31.0	-6.0
35	30	33	35	34.0	-4.0
36	20	32	47	39.5	-19.5
37	26	41	57	49.0	-23.0
38	30	42	29	35.5	-5.5
39	28	35	30	32.5	-4.5
40	25	31	38	34.5	-9.5
41	25	31	41	36.0	-11.0
42	24	36	42	39.0	-15.0
43	20	35	30	32.5	-12.5
44	20	47	37	42.0	-22.0
45	29	41	40	40.5	-11.5
46	30	28	29	28.5	1.5
47	24	32	31	31.5	-7.5
48	24	35	35	35.0	-11.0
49	21	44	38	41.0	-20.0
50	26	40	19	29.5	-3.5

mean nuclear counts	25.70	sd	5.53
mean cytoplasm counts	36.45	sd	5.80
mean net grains per nucleus	-10.75	sd	6.65
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D60-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	25	33	31	32.0	-7.0
2	26	34	37	35.5	-9.5
3	16	46	33	39.5	-23.5
4	32	33	29	31.0	1.0
5	30	32	29	30.5	-0.5
6	26	31	29	30.0	-4.0
7	18	26	26	26.0	-8.0
8	28	39	39	39.0	-11.0
9	28	50	34	42.0	-14.0
10	24	32	26	29.0	-5.0
11	35	50	44	47.0	-12.0
12	30	41	42	41.5	-11.5
13	27	37	35	36.0	-9.0
14	16	27	30	28.5	-12.5
15	18	31	30	30.5	-12.5
16	25	30	36	33.0	-8.0
17	24	40	41	40.5	-16.5
18	25	37	45	41.0	-16.0
19	26	32	31	31.5	-5.5
20	19	36	25	30.5	-11.5
21	25	33	35	34.0	-9.0
22	21	26	31	28.5	-7.5
23	33	31	31	31.0	2.0
24	41	50	44	47.0	-6.0
25	31	33	37	35.0	-4.0
26	21	31	35	33.0	-12.0
27	34	36	36	36.0	-2.0
28	18	17	19	18.0	0.0
29	30	41	30	35.5	-5.5
30	33	38	40	39.0	-6.0
31	21	31	33	32.0	-11.0
32	19	28	26	27.0	-8.0
33	17	24	29	26.5	-9.5
34	19	31	25	28.0	-9.0
35	19	17	25	21.0	-2.0
36	20	19	23	21.0	-1.0
37	20	45	45	45.0	-25.0
38	19	26	30	28.0	-9.0
39	28	36	35	35.5	-7.5
40	29	33	46	39.5	-10.5
41	25	28	36	32.0	-7.0
42	24	28	31	29.5	-5.5
43	22	42	41	41.5	-19.5
44	17	27	35	31.0	-14.0
45	29	24	23	23.5	5.5
46	28	38	32	35.0	-7.0
47	24	37	30	33.5	-9.5
48	27	39	34	36.5	-9.5
49	22	28	32	30.0	-8.0
50	13	22	28	25.0	-12.0

mean nuclear counts	24.54	sd	5.85
mean cytoplasm counts	33.05	sd	6.49
mean net grains per nucleus	-8.51	sd	5.86
% cells in repair	2%		
mean net grains of cells in repair	5.50	sd	0.00

Study number	6657/02
Slide number	D62-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	17	19	18	18.5	-1.5
2	20	38	34	36.0	-16.0
3	33	34	33	33.5	-0.5
4	29	47	42	44.5	-15.5
5	36	72	65	68.5	-32.5
6	33	42	52	47.0	-14.0
7	34	52	57	54.5	-20.5
8	27	68	45	56.5	-29.5
9	31	45	42	43.5	-12.5
10	42	53	49	51.0	-9.0
11	41	61	59	60.0	-19.0
12	28	40	43	41.5	-13.5
13	28	37	47	42.0	-14.0
14	25	35	38	36.5	-11.5
15	28	44	41	42.5	-14.5
16	24	59	63	61.0	-37.0
17	24	41	45	43.0	-19.0
18	32	51	58	54.5	-22.5
19	34	40	50	45.0	-11.0
20	31	54	48	51.0	-20.0
21	38	61	57	59.0	-21.0
22	19	50	43	46.5	-27.5
23	33	47	34	40.5	-7.5
24	27	46	51	48.5	-21.5
25	29	45	57	51.0	-22.0
26	28	36	44	40.0	-12.0
27	24	27	28	27.5	-3.5
28	36	39	54	46.5	-10.5
29	34	46	67	56.5	-22.5
30	34	50	57	53.5	-19.5
31	28	53	49	51.0	-23.0
32	24	59	52	55.5	-31.5
33	31	32	51	41.5	-10.5
34	33	55	54	54.5	-21.5
35	40	59	51	55.0	-15.0
36	50	61	69	65.0	-15.0
37	40	55	42	48.5	-8.5
38	34	44	54	49.0	-15.0
39	41	82	78	80.0	-39.0
40	39	57	67	62.0	-23.0
41	35	48	52	50.0	-15.0
42	44	60	53	56.5	-12.5
43	26	46	50	48.0	-22.0
44	44	65	67	66.0	-22.0
45	34	51	60	55.5	-21.5
46	36	53	61	57.0	-21.0
47	38	60	53	56.5	-18.5
48	30	59	68	63.5	-33.5
49	33	54	57	55.5	-22.5
50	35	63	49	56.0	-21.0

mean nuclear counts	32.28	sd	6.77
mean cytoplasm counts	50.53	sd	10.67
mean net grains per nucleus	-18.25	sd	8.30
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	D62-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	28	50	44	47.0	-19.0
2	24	51	37	44.0	-20.0
3	30	59	61	60.0	-30.0
4	34	47	53	50.0	-16.0
5	25	31	36	33.5	-8.5
6	35	48	34	41.0	-6.0
7	20	36	34	35.0	-15.0
8	27	42	47	44.5	-17.5
9	40	44	46	45.0	-5.0
10	22	31	23	27.0	-5.0
11	27	27	24	25.5	1.5
12	33	42	42	42.0	-9.0
13	26	48	35	41.5	-15.5
14	23	55	46	50.5	-27.5
15	29	44	30	37.0	-8.0
16	29	44	43	43.5	-14.5
17	30	58	49	53.5	-23.5
18	37	52	55	53.5	-16.5
19	34	59	52	55.5	-21.5
20	44	64	58	61.0	-17.0
21	26	43	47	45.0	-19.0
22	42	48	54	51.0	-9.0
23	28	59	61	60.0	-32.0
24	23	50	35	42.5	-19.5
25	38	48	48	48.0	-10.0
26	34	52	52	52.0	-18.0
27	38	47	44	45.5	-7.5
28	38	44	44	44.0	-6.0
29	30	62	50	56.0	-26.0
30	30	45	59	52.0	-22.0
31	25	39	33	36.0	-11.0
32	35	58	55	56.5	-21.5
33	34	40	46	43.0	-9.0
34	26	54	42	48.0	-22.0
35	30	44	46	45.0	-15.0
36	28	52	53	52.5	-24.5
37	49	74	78	76.0	-27.0
38	42	49	56	52.5	-10.5
39	33	54	57	55.5	-22.5
40	29	55	52	53.5	-24.5
41	35	48	48	48.0	-13.0
42	23	40	41	40.5	-17.5
43	25	46	58	52.0	-27.0
44	34	49	37	43.0	-9.0
45	40	51	53	52.0	-12.0
46	30	61	60	60.5	-30.5
47	37	52	54	53.0	-16.0
48	34	51	57	54.0	-20.0
49	36	51	49	50.0	-14.0
50	33	68	66	67.0	-34.0

mean nuclear counts	31.64	sd	6.29
mean cytoplasm counts	48.50	sd	9.29
mean net grains per nucleus	-16.86	sd	8.00
% cells in repair	0%		
mean net grains of cells in repair	0.00	sd	0.00

Study number	6657/02
Slide number	E66-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	50	40	42	41.0	9.0
2	44	44	34	39.0	5.0
3	46	41	45	43.0	3.0
4	52	38	39	38.5	13.5
5	67	38	64	51.0	16.0
6	56	47	35	41.0	15.0
7	71	54	59	56.5	14.5
8	61	44	35	39.5	21.5
9	68	54	57	55.5	12.5
10	67	49	56	52.5	14.5
11	53	51	48	49.5	3.5
12	61	38	40	39.0	22.0
13	66	40	56	48.0	18.0
14	61	41	43	42.0	19.0
15	60	33	27	30.0	30.0
16	52	28	36	32.0	20.0
17	64	52	47	49.5	14.5
18	62	52	49	50.5	11.5
19	61	42	26	34.0	27.0
20	55	27	41	34.0	21.0
21	51	22	15	18.5	32.5
22	69	43	44	43.5	25.5
23	41	25	27	26.0	15.0
24	59	50	48	49.0	10.0
25	65	52	65	58.5	6.5
26	50	24	27	25.5	24.5
27	75	45	52	48.5	26.5
28	48	38	36	37.0	11.0
29	68	38	42	40.0	28.0
30	44	32	18	25.0	19.0
31	70	51	43	47.0	23.0
32	69	50	54	52.0	17.0
33	55	30	34	32.0	23.0
34	51	49	41	45.0	6.0
35	60	53	51	52.0	8.0
36	57	29	41	35.0	22.0
37	59	46	52	49.0	10.0
38	58	48	38	43.0	15.0
39	54	39	35	37.0	17.0
40	58	28	34	31.0	27.0
41	43	34	41	37.5	5.5
42	64	38	43	40.5	23.5
43	38	25	31	28.0	10.0
44	62	50	52	51.0	11.0
45	54	55	48	51.5	2.5
46	61	39	32	35.5	25.5
47	75	57	51	54.0	21.0
48	76	48	58	53.0	23.0
49	73	57	44	50.5	22.5
50	77	54	50	52.0	25.0

mean nuclear counts	59.22	sd	9.62
mean cytoplasm counts	42.28	sd	9.50
mean net grains per nucleus	16.94	sd	7.75
% cells in repair	94%		
mean net grains of cells in repair	17.83	sd	7.10

Study number	6657/02
Slide number	E66-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	47	32	38	35.0	12.0
2	59	42	39	40.5	18.5
3	52	29	24	26.5	25.5
4	51	31	28	29.5	21.5
5	33	31	29	30.0	3.0
6	48	45	30	37.5	10.5
7	36	30	31	30.5	5.5
8	43	40	49	44.5	-1.5
9	46	34	33	33.5	12.5
10	54	29	37	33.0	21.0
11	53	20	28	24.0	29.0
12	54	40	35	37.5	16.5
13	54	24	25	24.5	29.5
14	34	32	22	27.0	7.0
15	33	24	25	24.5	8.5
16	43	27	33	30.0	13.0
17	52	37	46	41.5	10.5
18	54	40	38	39.0	15.0
19	48	38	46	42.0	6.0
20	38	36	42	39.0	-1.0
21	50	32	40	36.0	14.0
22	44	48	38	43.0	1.0
23	54	51	45	48.0	6.0
24	62	44	44	44.0	18.0
25	54	29	45	37.0	17.0
26	42	23	35	29.0	13.0
27	45	37	41	39.0	6.0
28	60	40	36	38.0	22.0
29	44	16	26	21.0	23.0
30	53	32	37	34.5	18.5
31	57	40	29	34.5	22.5
32	48	52	44	48.0	0.0
33	56	44	36	40.0	16.0
34	55	41	53	47.0	8.0
35	39	29	39	34.0	5.0
36	46	38	44	41.0	5.0
37	53	36	52	44.0	9.0
38	55	32	34	33.0	22.0
39	52	44	46	45.0	7.0
40	49	40	31	35.5	13.5
41	58	42	45	43.5	14.5
42	56	45	46	45.5	10.5
43	59	45	39	42.0	17.0
44	67	36	48	42.0	25.0
45	50	48	38	43.0	7.0
46	48	43	46	44.5	3.5
47	54	40	39	39.5	14.5
48	64	31	29	30.0	34.0
49	63	15	15	15.0	48.0
50	55	37	45	41.0	14.0

mean nuclear counts	50.48	sd	7.92
mean cytoplasm counts	36.54	sd	7.53
mean net grains per nucleus	13.94	sd	9.60
% cells in repair	88%		
mean net grains of cells in repair	15.73	sd	8.79

Study number	6657/02
Slide number	G102-1

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	52	56	43	49.5	2.5
2	52	49	45	47.0	5.0
3	34	33	31	32.0	2.0
4	53	40	36	38.0	15.0
5	47	42	41	41.5	5.5
6	50	43	50	46.5	3.5
7	41	40	42	41.0	0.0
8	41	32	26	29.0	12.0
9	49	47	32	39.5	9.5
10	47	52	49	50.5	-3.5
11	41	27	25	26.0	15.0
12	51	45	44	44.5	6.5
13	41	40	38	39.0	2.0
14	45	34	45	39.5	5.5
15	54	31	32	31.5	22.5
16	52	37	45	41.0	11.0
17	49	30	40	35.0	14.0
18	46	26	33	29.5	16.5
19	46	32	25	28.5	17.5
20	49	39	43	41.0	8.0
21	54	29	27	28.0	26.0
22	59	48	38	43.0	16.0
23	59	37	35	36.0	23.0
24	49	30	24	27.0	22.0
25	42	28	39	33.5	8.5
26	47	36	36	36.0	11.0
27	39	24	23	23.5	15.5
28	46	44	43	43.5	2.5
29	51	55	46	50.5	0.5
30	47	44	51	47.5	-0.5
31	55	34	39	36.5	18.5
32	50	28	46	37.0	13.0
33	42	33	26	29.5	12.5
34	47	44	46	45.0	2.0
35	46	33	42	37.5	8.5
36	50	35	37	36.0	14.0
37	43	31	33	32.0	11.0
38	41	35	37	36.0	5.0
39	53	39	32	35.5	17.5
40	45	42	41	41.5	3.5
41	47	45	54	49.5	-2.5
42	38	34	46	40.0	-2.0
43	43	37	32	34.5	8.5
44	39	25	33	29.0	10.0
45	62	57	64	60.5	1.5
46	47	30	27	28.5	18.5
47	55	39	46	42.5	12.5
48	33	35	24	29.5	3.5
49	45	28	23	25.5	19.5
50	48	39	39	39.0	9.0

mean nuclear counts	47.24	sd	6.08
mean cytoplasm counts	37.67	sd	7.85
mean net grains per nucleus	9.57	sd	7.40
% cells in repair	70%		
mean net grains of cells in repair	13.24	sd	5.53

Study number	6657/02
Slide number	G102-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	65	52	46	49.0	16.0
2	69	43	39	41.0	28.0
3	58	32	42	37.0	21.0
4	67	47	52	49.5	17.5
5	69	44	43	43.5	25.5
6	58	54	44	49.0	9.0
7	42	26	30	28.0	14.0
8	54	29	37	33.0	21.0
9	60	44	33	38.5	21.5
10	66	49	44	46.5	19.5
11	51	49	29	39.0	12.0
12	45	28	31	29.5	15.5
13	54	37	48	42.5	11.5
14	54	40	39	39.5	14.5
15	50	31	37	34.0	16.0
16	50	46	31	38.5	11.5
17	57	42	39	40.5	16.5
18	56	41	45	43.0	13.0
19	57	49	43	46.0	11.0
20	73	58	52	55.0	18.0
21	54	42	51	46.5	7.5
22	53	30	37	33.5	19.5
23	58	37	33	35.0	23.0
24	43	30	31	30.5	12.5
25	58	31	43	37.0	21.0
26	66	38	49	43.5	22.5
27	57	42	25	33.5	23.5
28	72	28	38	33.0	39.0
29	52	38	34	36.0	16.0
30	68	18	24	21.0	47.0
31	52	50	36	43.0	9.0
32	58	31	40	35.5	22.5
33	57	41	52	46.5	10.5
34	54	31	26	28.5	25.5
35	56	41	46	43.5	12.5
36	60	44	46	45.0	15.0
37	42	22	39	30.5	11.5
38	48	32	33	32.5	15.5
39	59	37	34	35.5	23.5
40	64	53	50	51.5	12.5
41	49	51	38	44.5	4.5
42	71	40	44	42.0	29.0
43	61	53	55	54.0	7.0
44	54	48	50	49.0	5.0
45	37	39	35	37.0	0.0
46	48	45	47	46.0	2.0
47	53	37	41	39.0	14.0
48	50	44	45	44.5	5.5
49	52	47	44	45.5	6.5
50	51	48	51	49.5	1.5

mean nuclear counts	56.24	sd	8.17
mean cytoplasm counts	40.30	sd	7.36
mean net grains per nucleus	15.94	sd	8.95
% cells in repair	92%		
mean net grains of cells in repair	17.15	sd	8.26

Study number	6657/02
Slide number	F82-2

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	52	46	49	47.5	4.5
2	49	38	39	38.5	10.5
3	52	33	44	38.5	13.5
4	45	43	36	39.5	5.5
5	48	34	46	40.0	8.0
6	47	40	43	41.5	5.5
7	52	30	47	38.5	13.5
8	61	32	49	40.5	20.5
9	58	41	45	43.0	15.0
10	57	52	48	50.0	7.0
11	61	46	34	40.0	21.0
12	46	27	24	25.5	20.5
13	51	35	41	38.0	13.0
14	56	42	51	46.5	9.5
15	57	45	43	44.0	13.0
16	57	40	50	45.0	12.0
17	54	35	50	42.5	11.5
18	54	46	55	50.5	3.5
19	52	28	32	30.0	22.0
20	44	38	35	36.5	7.5
21	51	44	45	44.5	6.5
22	54	52	43	47.5	6.5
23	62	38	35	36.5	25.5
24	45	31	44	37.5	7.5
25	50	48	32	40.0	10.0
26	56	45	39	42.0	14.0
27	49	35	37	36.0	13.0
28	57	52	48	50.0	7.0
29	46	35	41	38.0	8.0
30	62	31	54	42.5	19.5
31	54	43	42	42.5	11.5
32	52	50	39	44.5	7.5
33	56	43	45	44.0	12.0
34	52	39	45	42.0	10.0
35	50	30	33	31.5	18.5
36	47	30	26	28.0	19.0
37	48	26	28	27.0	21.0
38	50	41	40	40.5	9.5
39	51	43	27	35.0	16.0
40	48	36	32	34.0	14.0
41	51	44	36	40.0	11.0
42	50	29	33	31.0	19.0
43	44	42	39	40.5	3.5
44	46	41	40	40.5	5.5
45	42	32	29	30.5	11.5
46	49	16	24	20.0	29.0
47	62	49	48	48.5	13.5
48	44	17	15	16.0	28.0
49	45	22	33	27.5	17.5
50	51	34	32	33.0	18.0

mean nuclear counts	51.54	sd	5.24
mean cytoplasm counts	38.54	sd	7.48
mean net grains per nucleus	13.00	sd	6.30
% cells in repair	94%		
mean net grains of cells in repair	13.59	sd	6.04

Study number	6657/02
Slide number	F82-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	58	39	51	45.0	13.0
2	66	38	38	38.0	28.0
3	70	45	52	48.5	21.5
4	65	52	50	51.0	14.0
5	65	48	42	45.0	20.0
6	49	41	46	43.5	5.5
7	56	40	36	38.0	18.0
8	71	45	31	38.0	33.0
9	58	37	23	30.0	28.0
10	48	33	45	39.0	9.0
11	45	25	34	29.5	15.5
12	67	42	41	41.5	25.5
13	79	44	32	38.0	41.0
14	64	40	47	43.5	20.5
15	49	32	33	32.5	16.5
16	51	30	26	28.0	23.0
17	47	30	30	30.0	17.0
18	36	41	37	39.0	-3.0
19	43	29	36	32.5	10.5
20	44	36	34	35.0	9.0
21	53	42	39	40.5	12.5
22	48	40	43	41.5	6.5
23	66	37	34	35.5	30.5
24	58	45	43	44.0	14.0
25	66	27	33	30.0	36.0
26	62	41	43	42.0	20.0
27	57	35	44	39.5	17.5
28	62	60	42	51.0	11.0
29	58	40	42	41.0	17.0
30	64	40	42	41.0	23.0
31	52	37	39	38.0	14.0
32	45	35	30	32.5	12.5
33	46	39	40	39.5	6.5
34	50	36	50	43.0	7.0
35	52	49	46	47.5	4.5
36	54	37	36	36.5	17.5
37	57	38	30	34.0	23.0
38	48	35	21	28.0	20.0
39	49	35	44	39.5	9.5
40	53	37	28	32.5	20.5
41	48	39	31	35.0	13.0
42	48	27	32	29.5	18.5
43	52	43	45	44.0	8.0
44	48	27	41	34.0	14.0
45	49	27	33	30.0	19.0
46	46	30	33	31.5	14.5
47	51	33	41	37.0	14.0
48	52	40	53	46.5	5.5
49	51	30	25	27.5	23.5
50	58	39	51	45.0	13.0

mean nuclear counts	54.56	sd	8.66
mean cytoplasm counts	37.94	sd	6.19
mean net grains per nucleus	16.62	sd	8.50
% cells in repair	96%		
mean net grains of cells in repair	17.28	sd	7.98

Study number	6657/02
Slide number	F84-1

	Grain counts				Net grains
Cell number	NUC	CYT 1	CYT 2	mean CYT	per nucleus
1	58	45	36	40.5	17.5
2	62	52	42	47.0	15.0
3	60	44	36	40.0	20.0
4	43	35	32	33.5	9.5
5	45	30	22	26.0	19.0
6	46	36	29	32.5	13.5
7	41	34	31	32.5	8.5
8	41	20	34	27.0	14.0
9	43	29	28	28.5	14.5
10	66	59	58	58.5	7.5
11	58	34	42	38.0	20.0
12	50	36	43	39.5	10.5
13	49	35	29	32.0	17.0
14	49	34	38	36.0	13.0
15	47	30	42	36.0	11.0
16	35	31	42	36.5	-1.5
17	41	35	32	33.5	7.5
18	32	29	32	30.5	1.5
19	40	30	31	30.5	9.5
20	33	28	23	25.5	7.5
21	44	29	22	25.5	18.5
22	43	22	21	21.5	21.5
23	43	29	31	30.0	13.0
24	44	27	36	31.5	12.5
25	40	34	31	32.5	7.5
26	38	34	30	32.0	6.0
27	36	34	33	33.5	2.5
28	54	31	51	41.0	13.0
29	41	31	33	32.0	9.0
30	50	42	37	39.5	10.5
31	43	32	36	34.0	9.0
32	33	22	26	24.0	9.0
33	37	30	32	31.0	6.0
34	45	31	26	28.5	16.5
35	50	32	29	30.5	19.5
36	47	30	25	27.5	19.5
37	57	35	39	37.0	20.0
38	66	25	33	29.0	37.0
39	37	27	32	29.5	7.5
40	31	27	31	29.0	2.0
41	41	31	28	29.5	11.5
42	37	29	25	27.0	10.0
43	30	26	28	27.0	3.0
44	32	20	19	19.5	12.5
45	55	30	28	29.0	26.0
46	47	34	27	30.5	16.5
47	42	29	27	28.0	14.0
48	50	25	24	24.5	25.5
49	37	19	32	25.5	11.5
50	49	39	35	37.0	12.0

mean nuclear counts	44.76	sd	8.93
mean cytoplasm counts	32.01	sd	6.62
mean net grains per nucleus	12.75	sd	6.98
% cells in repair	90%		
mean net grains of cells in repair	14.00	sd	6.16

Study number	6657/02
Slide number	F84-3

Cell number	Grain counts NUC	CYT 1	CYT 2	mean CYT	Net grains per nucleus
1	57	30	37	33.5	23.5
2	41	36	41	38.5	2.5
3	43	23	23	23.0	20.0
4	41	35	35	35.0	6.0
5	61	47	32	39.5	21.5
6	53	42	35	38.5	14.5
7	54	33	34	33.5	20.5
8	50	35	46	40.5	9.5
9	31	19	26	22.5	8.5
10	27	24	32	28.0	-1.0
11	48	44	44	44.0	4.0
12	50	32	32	32.0	18.0
13	54	35	38	36.5	17.5
14	36	26	29	27.5	8.5
15	53	40	36	38.0	15.0
16	60	41	56	48.5	11.5
17	55	21	43	32.0	23.0
18	46	36	32	34.0	12.0
19	49	32	33	32.5	16.5
20	43	25	26	25.5	17.5
21	45	31	27	29.0	16.0
22	62	38	42	40.0	22.0
23	56	33	42	37.5	18.5
24	54	36	32	34.0	20.0
25	58	42	50	46.0	12.0
26	42	35	35	35.0	7.0
27	46	35	26	30.5	15.5
28	54	36	53	44.5	9.5
29	45	36	32	34.0	11.0
30	47	34	33	33.5	13.5
31	51	33	40	36.5	14.5
32	43	40	37	38.5	4.5
33	44	41	44	42.5	1.5
34	49	26	37	31.5	17.5
35	45	46	30	38.0	7.0
36	45	40	42	41.0	4.0
37	56	41	54	47.5	8.5
38	47	39	41	40.0	7.0
39	53	48	52	50.0	3.0
40	47	40	39	39.5	7.5
41	52	36	46	41.0	11.0
42	53	45	41	43.0	10.0
43	57	42	43	42.5	14.5
44	50	32	31	31.5	18.5
45	44	31	36	33.5	10.5
46	34	23	32	27.5	6.5
47	52	31	28	29.5	22.5
48	79	47	56	51.5	27.5
49	41	27	22	24.5	16.5
50	62	34	54	44.0	18.0

mean nuclear counts	49.30	sd	8.72
mean cytoplasm counts	36.41	sd	6.93
mean net grains per nucleus	12.89	sd	6.63
% cells in repair	86%		
mean net grains of cells in repair	14.56	sd	5.52

Appendix 2 – GLP compliance monitoring unit statement

voedsel en waren autoriteit

ENDORSEMENT OF COMPLIANCE

WITH THE OECD PRINCIPLES OF
GOOD LABORATORY PRACTICE

Pursuant to the Netherlands GLP Compliance Monitoring Programme and according to Directive 2004/9/EC the conformity with the OECD Principles of GLP was assessed on 7-11 June 2004 at

TNO Nutrition and Food Research
Utrechtseweg 48, P.O. Box 360
3700 AJ ZEIST

It is herewith confirmed that the afore-mentioned test facility is currently operating in compliance with the OECD Principles of Good Laboratory Practice in the following areas of expertise: Toxicity, mutagenicity, biodegradation, residues, analytical and clinical chemistry, kinetics and metabolism, and occupational toxicity.

The Hague, 19 August 2004

NEDERLAND STAATSTOEZICHT OP DE VOLKSGEZONDHEID

Dr Th. Helder
GLP Compliance Monitoring Department

Inspectorate for Health Protection and Veterinary Public Health
Food and Consumer Product Safety Authority