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Effects of Cigarette Smoking and
Vanillin concentration on Sister
Chromatid Exchange and
Chromosome Aberrations in
Women aged 16-25.

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of Master of Science in Genetics
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 **ABSTRACT**

The chromosomes of human peripheral blood lymphocytes were analysed for sister chromatid exchanges (SCEs) and structural aberrations and correlated to cigarette smoking habits of 15 individuals and to the concentration of vanillin, a flavour compound of cigarettes. An analysis of variance showed that there was a significant increase in the frequency of SCEs in smokers compared with non smokers. With non smokers had a mean SCE of 9.712 per cell whereas smokers had a mean of 12.771 SCEs per cell. Cigarette smoking showed no significant effect on the frequency of chromosome aberrations. *In vitro* studies also showed that an increase in vanillin concentration induced an increase in the number of SCEs per cell. Conversely there was no relationship between cigarette smoking and structural chromosome aberrations. The present studies indicate that cigarette smoking confers a genetic risk on the individual with vanillin contributing to such a risk.

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CONTENTS

Abstract	i
Acknowledgements	ii
Contents	iii
List of Tables	viii
List of Figures	ix
1.0 Introduction	1
2.0 Aims of Thesis	6
3.0 Literature Review	7
3.1 Cancer and Cytogenetics	7
3.1.1 Somatic Mutation Theory of Cancer	7
3.2 Carcinogens and Mutagens	8
3.2.1 Chromosome Instability	8
3.2.2 Environmental Parameters	8
3.3 Smoking and Cancer	9
3.4 Measuring Carcinogenicity and Mutagenicity	10
3.4.1 Human Peripheral lymphocytes	10
- Advantages of using peripheral blood lymphocytes	10
- Disadvantages of using peripheral blood lymphocytes	11
3.4.1 Chromosomal Aberrations	11
- Principles of chromosome aberrations	12
- Unstable aberrations	12
- Stable aberrations	13

- Significance of Chromosome Aberrations	13
- Classification of Aberrations	13
- Chromatid-type Aberrations	13
- Chromosome-type Aberrations	14
- Numerical Aberrations	15
- Balanced Translocations and Inversions	15
3.4.3 Sister Chromatid Exchange (SCE)	15
- Method	15
- Genetic Basis	16
- Models for SCE formation	17
- Alternative Replication Bypass Model	18
- Painter's Replication Model for SCE	25
- Location of SCEs	28
- Genetic and Environmental Influences on Baseline SCE	28
- Age	28
- Gender	29
- Culture media	29
- Serum	30
- State of health of Donor	30
- Time	30
- White blood cell count	31
- Coffee drinking status	31
- Dietary habits	31
- Reproductive hormones and biological rhythms	31
- BrdU concentration	33
- Strengths of SCE analysis	33
- Weaknesses of SCE analysis	34
- Chromosome aberrations and SCEs	34
3.4.4 Microgel Electrophoresis Assay (Comet Test)	35

3.4.5	A Modified Immunochemical Assay	36
3.5	Smoking	37
3.5.1	Chromosome Aberrations	37
	- <i>in vitro</i>	37
	- <i>in vivo</i>	38
3.5.2	Sister Chromatid Exchanges	39
	- <i>in vitro</i>	39
	- <i>in vivo</i>	40
	- Salmonella	42
	- Various Eukaryotic Tests	44
	- Yeasts	44
	- Neurospora	44
	- Drosophila	44
	- Urine	45
	- DNA Repair	46
	- Sperm Morphology	46
	- Teratogenesis	46
	- Cell Transformation	48
	- Reactive Oxidants	49
	- Signs of Damage by Free Radicals	50
4.0	Materials and Methods	52
4.1	Smoking Study	52
4.1.1	Participants	52
4.1.2	Specimen Collection	52
4.1.3	Preparation of Blood Films	52
4.1.4	Staining of Blood Films	53
4.1.5	Leucocyte Counts	53
4.1.6	Lymphocyte Cultures	54
4.1.7	Harvesting	55
4.1.8	Staining	56

	- Giemsa Block Stain	56
	- Fluorescence-Plus-Giemsa Stain	57
4.1.9	Scoring	58
	- Scoring Chromosome Aberrations	58
	- Scoring Sister Chromatid Exchanges	59
4.2	Vanillin Study	59
	4.2.1 Specimen Collection	59
	4.2.2 Lymphocyte Cultures	59
	4.2.3 Scoring	60
5.0	Results	61
5.1	Effects of smoking: frequency of SCEs	61
5.2	Effects of smoking: Frequency of chromosome aberrations.	64
5.3	Vanillin and SCEs	68
5.4	Vanillin and chromosome aberrations	72
6.0	Discussion	80
6.1	Smoking	80
6.2	Vanillin Concentration	82
6.3	Sources of variation	83
6.4	How is the damage caused and what does this mean?	85
7.0	Conclusions	88
7.1	Vanillin	88
7.2	Smoking	88

Appendicies	89
Appendix 1: Personal Health Questionnaire	89
Appendix 2: Effects of Smoking on SCE	102
Appendix 3: Effects of Smoking on CA	107
Appendix 4: Effects of Vanillin on SCE	111
8.0 References	114

LIST OF TABLES

5.1	ANOVA test to analyse effects of smoking on SCE.	63
5.2	Table of exchange against treatment.	64
5.3	Table of breaks against treatment.	66
5.4	Statistics for table of breaks against treatment	67
5.5	Table of chromosome type aberrations by treatment.	67-68
5.6	Statistics for table of chromosome type aberrations by treatment.	68
5.7	Table of vanillin concentration against the negative control.	71
5.8	Table of vanillin concentration against the positive control.	71
5.9	Table of treatment against exchange.	73
5.10	Table of treatment against breaks.	74
5.11	Statistics for table of treatment against breaks.	75
5.12	Table of treatment by chromosome type aberrations.	76
5.13	Statistics for table of treatment by chromosome type aberrations.	77
5.14	Table of treatment against gaps.	78
5.15	Statistics for table of treatment against gaps.	79

LIST OF FIGURES

3.1	Figure of SCE staining.	16
3.2	Alternate rejoining processes.	20
3.3	Multiple lesion pathways.	23
3.4	Alternate replication bypass mechanisms.	24
3.5	Model for possible effects of DNA damaging agents.	25
3.6	Double-strand recombination at the junction between replicon clusters.	26
4.1	Preparation of a blood film.	53
4.2	Block stained human chromosome preparation.	56
4.3	various differential staining patterns observed.	58
5.1	SCE stained complement from a non smoking participant.	61
5.2	SCE stained complement from a smoking participant.	62
5.3	SCE stained complement from a smoking participant.	63
5.4	Preparation showing a gap in the large chromosome.	65
5.5	SCE stained negative control.	69
5.6	SCE stained positive control.	70