





Faculty of Home Economics  
Dept. of Nutrition and Food Science

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**Title of Thesis: "Studies on the effect of flavonoids containing diet on experimental animals treated with nitrosamines"**

**Degree: Ph.D. in Home Economics (Nutrition and Food Science)**

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# THANKES

To My Family, Father, Mother, Sister And Brothers

*Yours sincerely  
Nermeen*



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## LIST OF ABBREVIATIONS

<b>ALP</b>	Alkaline phosphatase
<b>ALT</b>	Alanine amino transferase
<b>AST</b>	Aspartate amino transferase
<b>ATP</b>	Adenosine triphosphate
<b>ATPase</b>	Adenosine triphosphatase
<b>B[a]P</b>	Benzo[a]pyrene
<b>BCA</b>	benzoyloxy cinnamaldehyde
<b>BHA</b>	Butylated hydroxyl anisol
<b>BHP</b>	British Herbal Pharmacoeia
<b>BHT</b>	Butylated hydroxyl toluene
<b>bp</b>	Basepairs
<b>BRL</b>	Electrophoretic grade agarose
<b>BUN</b>	Blood urea nitrogen
<b>CA</b>	Cinnamaldehyde
<b>CCAq</b>	Aqueous extract of <i>cinnamomum cassia</i>
<b>CF</b>	Cinnamon extract
<b>CFE</b>	Cinnamon Flavonoids Extract
<b>CHD</b>	Coronary heart disease
<b>CLF</b>	<i>Cinnamon verum</i> leaf extract
<b>COX</b>	Cyclooxygenase
<b>Cyto P450</b>	Cytochrome P450
<b>D.W</b>	Distilled water
<b>DBN</b>	N-N-dibutyl nitrosamine
<b>DBA</b>	N-N-dibutylamine
<b>DEN</b>	Diethylnitrosamine
<b>DMN</b>	Dimethylnitrosamine
<b>DNA</b>	Deoxyribonucleic acid
<b>DTNB</b>	5,5-dithiobis-(2-nitrobenzoic acid )
<b>e NOS</b>	Endothelial nitric oxide synthase
<b>EDTA</b>	Ethylene diamine tetraacetic acide
<b>EECC</b>	Ethanolic extracts of <i>cinnamomum cassia</i>
<b>GFR</b>	Glomerular filtration rate
<b>GOT</b>	Glutamic oxaloacetic transferase
<b>GPT</b>	Glutamic pyruvic transferase

<b>GPX</b>	Glutathion peroxidase
<b>GR</b>	Glutathion reductase
<b>GRAS</b>	Generally regarded as safe
<b>GSH</b>	Reduced glutathion
<b>GSH<sub>px</sub></b>	Glutathion peroxidase
<b>GSH-R</b>	Glutathion reductase
<b>GSSII</b>	Oxidized glutathion
<b>GST</b>	Glutathion S-transferase
<b>HCA</b>	hydroxycinnamaldehyde
<b>HIV</b>	Human immunodeficiency virus
<b>HPLC</b>	High performance liquid chromatography
<b>HWECC</b>	Hot water extracts of <i>cinnamomum cassia</i>
<b>IFN</b>	Interferon
<b>INOS</b>	Indicible nitric oxide synthase
<b>KDa</b>	kilodalton
<b>LDH</b>	lactate
<b>LDL</b>	Low density lipoprotein
<b>LPO</b>	Lipid peroxidation
<b>LPS</b>	Lipopolysaccharide
<b>MDA</b>	Malonaldehyde
<b>MDA-TBA</b>	Malonaldehyde -Thiobarbituric acid complex
<b>MHCP</b>	Methylhydroxy chalcone polymer
<b>MMP-9</b>	Metalloproteinase-9
<b>MRP1</b>	Multidrug resistance protein 1
<b>NAD</b>	Nicotinamide adenine dinucleotide
<b>NADPH</b>	Reduced nicotinamide adenine dinucleotide phosphate
<b>NBT</b>	Nitoblu tetrazolium
<b>NDEA</b>	N-nitroso diethylamine
<b>NOC<sub>s</sub></b>	N-Nitroso compounds
<b>NO<sub>s</sub></b>	N-Nitrosamine
<b>OD</b>	Optical density
<b>ONOO-</b>	Peroxynitrite anion
<b>PAH</b>	Polycyclic aromatic hydrocarbons
<b>PBMC</b>	Peripheral blood mononuclear cells
<b>PBS</b>	Phosphate buffer saline
<b>PCA</b>	Protocatechuic acid
<b>PGE(2)</b>	Prostaglandin E (2)
<b>ppm</b>	Part per million

<b>8-OH-dG</b>	8-hydroxy deoxyguanosine
<b>ROM<sub>s</sub></b>	Reactive oxygen metabolites
<b>ROOH</b>	Organic peroxides
<b>ROS</b>	Reactive oxygen speacies
<b>rpm</b>	Rounds per minute
<b>SDS</b>	Sodium dodecyl sulfate
<b>SGOT</b>	Serum glutamic oxaloacetic transaminase
<b>SGPT</b>	Serum glutamic pyruvic transaminase
<b>SH</b>	Sulfhydryl group
<b>SK-HeP1</b>	Hepatocellular carcinoma
<b>SOD</b>	Superoxide dismutase
<b>TAA</b>	Tumor-associated antigen
<b>TBA</b>	Thiobarbituric acid
<b>TBARS</b>	Thiobarbituric acid reacting substances
<b>TBE</b>	Tris-borate/EDTA
<b>TE</b>	Total protein
<b>TNF</b>	Tumor necrosis factor
<b>UV</b>	Ultraviolet

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