

List of Tables

Table No.	Tables Title	Page No.
1	A Model of the Causal Connections between Noise, Community Reaction, Modifiers and Health Effects.	2
2	Blood glucose levels (as mg/dl) of mice to studied experimental groups. (GB1 exposed to 121 dB, GB2 exposed to 100 dB, and GB3 exposed to 90 dB) in comparison with control group.	49
3	Statistical analysis of Blood glucose levels (as mg/dl) all different studied groups.	49
4	Statistical analysis of Hemoglobin Hb (g/dl) levels all different studied groups.	51
5	Statistical analysis of Hematocrit HT (%) levels all different studied groups.	53
6	Statistical analysis of Mean corpuscular volume (MCV) of all different studied groups.	55
7	Statistical analysis of Mean corpuscular hemoglobin (MCH) of all different studied groups.	57
8	Statistical analysis of Mean corpuscular hemoglobin concentration (MCHC) of all different studied groups.	59
9	Statistical analysis of red blood cells counts (RBC) ($\times 10^6/\mu\text{l}$) levels all different studied groups.	61
10	Statistical analysis of white blood cells counts (WBC) ($\times 10^3/\mu\text{l}$) of all different studied groups.	63
11	Statistical analysis of platelets($\times 10^3/\mu\text{l}$) of all different studied groups.	65
12	Malondialdehyde levels (as n mol/ mg protein) of mice brain tissues to studied of experimental groups. (GB1 exposed to 121 dB, GB2 exposed to 100 dB, and GB2 exposed to 90 dB) in comparison with control group.	67
13	Statistical analysis of malondialdehyde (MDA) levels (as n mol/ mg protein) of mice brain tissues of all different studied groups.	68
14	Superoxide dismutase (SOD) activity (as IU / mg protein) of mice brain tissues of experimental groups. (GB1 exposed to 121 dB, GB2 exposed to 100 dB, and GB2 exposed to 90 dB) as comparison with control group.	69
15	Statistical analysis of Superoxide dismutase (SOD) activity (as IU/mg protein) of mice brain tissues of all studied groups.	70

List of Figure

Figure No.	Figure Title	Page No.
1	Moving pressure differences.	5
2	typical range of sound levels, decibels	8
3	Lace is the link between the sound and ears.	10
4	Auditory pathways to the brain	11
5	Repetition time	14
6	Echo Time	15
7	A- In T1 – Weighting of gradient echo. B- In T2 – Weighting of gradient echo.	15
8	Long TR and long TE result in images weighted heavily by the T2 of Tissue, or T2 – Weighted images (T2WIs)	17
9	Typical frequency dependence of the dielectric constant of biological tissues. A measurement of muscular tissue.	19
10	Sample holder of ideal parallel plates; (b) frequency dependent, measured circuit model, in which C is capacitance and G is conductance	20
11	Relation between relative permittivity, conductivity and frequency.	21
12	Structure of a human Mn superoxide dismutase 2 tetramer	24
13	Human Anatomy & Physiology Note: On the top left–hand chart designating that response hypothalamus is "Short Term stress.	25
14	The anechoic chamber used for mice exposure to the MRI sound.	26
15	Schematic diagram of the anechoic chamber used for mice exposure to the MRI sound.	28
16	MRI System Closed Type	29
17	Suppliers Digital Portable type Sound Level Meters	29
18	RCL meter	31
19	Tissue specimens were inserted in contact between the two electrodes	31
20	Standard curve of Superoxide dismutase SOD\	35
21	standard curve of Malondialdehyde MDA.	36
22	The standard curve of protein	38
23	Improved Neubauer counting chamber. The central area consists of 25 groups of 16 small squares separated by closely ruled triple lines (which appear as thick black lines in the figure).	40

24	Slide method of preparation of blood smears.	42
25	Longitudinal method of counting cells in differential white cell counts.	42
26	The MRI whole sound band in one	44
27	Expanded MRI sound.	44
28	Showing fully expanded MRI waveform bands labold 1 to 5. Bands 1,2,3, and 4 are the characteristic sound of the used MRI.	45
29	Shows the MRI sound frequency-intensity distribution diagram.	46
30	Variation of real conductivity with frequency of mice brain exposed to different MRI noise intensities.	47
31	Variation of relative permittivity with frequency of mice brain exposed to different MRI noise intensities.	47
32	Effect of MRI noise exposure on Blood glucose levels (as mg/dl) all different studied groups.	50
33	Effect of MRI noise exposure on hemoglobin level.	52
34	Effect of MRI noise exposure on hematocrit level	54
35	Effect of MRI noise exposure on Mean corpuscular volume (MCV).	56
36	Effect of MRI noise exposure on Mean corpuscular hemoglobin (MCH).	58
37	Effect of MRI noise exposure on Mean corpuscular hemoglobin concentration (MCHC).	60
38	Effect of MRI noise exposure on red blood cells counts RBCs count.	62
39	Effect of MRI noise exposure on WBCs count.	64
40	Effect of MRI noise exposure on platelets levels.	66
41	Effect of MRI noise exposure on MDA levels.	68
42	Effect of MRI noise exposure on Superoxide dismutase (SOD) activity.	70

List of Abbreviation

γ -	Alpha
τ	is the relaxation time
σ	conductivity
ϵ_{∞}	is the dielectric constant
ϵ_h	High frequency limiting permittivity
σ_L	low frequency limiting conductivity
ϵ_s	is the static,
A	area affected sound
A	surface area
ACTH	Adrenocorticotropic hormone
Ag Cl	Silver chloride
ANS	autonomic nervous system
C	capacitance
CAT	catalase
CBC	Complete blood count
CNS	Center nerves system
CSF	Cerebrospinal fluid
CT	Computed tomography
d	distance
DA	dopamine
DTPA	Diethylenetriaminepent acetic acid
E	harmonic field
EPI	echo planar imaging
ET	Echo Time
F/ m	Farad / meter
fMRI	magnetic resonance imaging function
G	conductance
GHz	Giga Hertz
GOD	Glucose oxidase
GRE	Gradient Echo
H ₂ O ₂	Hydrogen peroxide
Hb	Hemoglobin

HPA	hypothalamic-pituitary- adrenal
Ht	Hematocrit
Hz	Hertz
kHz	kiloe Hertz
Lp	Sound pressuar level
LPO	lipid peroxidation
Lw	Sound power level
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
MCV	Mean corpuscular volume
MDA	malonyldialdehyte
MHz	Miga Hertz
Mn- SOD	present in mitochondria and peroxisomes
MR	magnetic resonance
NO	nitric oxide
O\cdot2⁻	Superoxide anion radicals
P	instantaneous pressure as the sound wave
P	sound power
P₁	an absolute value of a power reference
P₂	absolute value of the power under evaluation
PA	<u>Public Address</u>
PBS	Sodium phosphate buffer saline.
PLT	Platelets
Pref	the reference power
R	Resistance
RBCs	red blood cells count
RCL meter	Capacitance , resistance and inductance
RF	radio frequency
rms	root mean square
RNS	reactive nitrogen species
ROS	reactive oxygen species
SE	Spin – echo
SOD	Superoxide dismutase

<u>SOD1</u>	Superoxide dismutase located in the <u>cytoplasm</u>
<u>SOD2</u>	Superoxide dismutase in the <u>mitochondria</u>
<u>SOD3</u>	Superoxide dismutase is <u>extracellular</u>
SPL	Sound pressure level
T1	(spin – lattice relaxation) time constant
T1	90 degree flip angle provides T1 – Weighting
T1WIs	T1 – weighted images
T2	coherence (spin – spin relaxation)
T2	(a low flip angle typical 10 -30 degree) produces a T2 – weighted images
T2WIs	T 2 – Weighted images
TBA	thiobarbituric acid
TR	Repetition time
U.S	United states
USA	United States America
v	velocity
WBCs	white blood cells count
WHO	World Health Organization
z	impedance
α	Gamma
β	Beta
ϵ	is the relative complex permittivity of the material
ϵ'	is the dielectric constant
ϵ''	is the loss factor of the material
ϵ_0	is the permittivity of free space
ρ	medium
σ_s	the dc conductivity of the material
ω	the angular frequency of the applied field
BDNF	Brain derived neurotrophic factor