

**2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP**

**ABSTRACTS BOOK**

**2-5 December 2015  
Dubai  
United Arab Emirates**

**Venue: Donatello Hotel**

## 2<sup>nd</sup> ASIAN AND AFRICAN STEREOLOGY CONGRESS

### **Editorial**

The “2<sup>nd</sup> Asian and African Stereology Congress” was held on 2-5 December 2015 in Dubai, United Arab Emirates. This symposium was organised by Turkish Society for Stereology. A total of 22 invited speakers and 73 participants attended the congress.

The congress was organized under two headings and the first three days were devoted to basic stereological techniques and their application, the fourth day was dedicated to scientific writing. The speakers from United Arab Emirates, Saudi Arabia, Tanzania, Sudan and Turkey talked on the stereological techniques and the scientific writing. In the last day of the congress, some of participants took a chance to participate stereology workshop.

This abstract book contains the abstracts of the presentations of the “2<sup>nd</sup> Asian and African Stereology Congress” that were only received from the authors.

2-5 December 2015

Presidents of the Congress  
Prof. Dr. Abdu ADEM  
Prof. Dr. Suleyman KAPLAN



Intensive  
**Hands on Training Stereology**  
Workshop

2-3 December 2015

**Intensive  
Hands on Training Stereology  
Workshop  
3<sup>th</sup> December 2015  
Dubai, United Arab Emirates**

Time	Topic	Responsible Person
13:00 - 14:00	Introduction to stereology and sampling strategies in stereology	S. Kaplan, Turkey
14:00 – 15:00	Stereological estimation of peripheral nerve fibers	O. G. Deniz, Turkey
<b>15:00 – 15:30</b>	<b>Coffee break</b>	<b>All</b>
15:30 – 16:30	Estimation of particle number on physical and optical sections: Physical and optical disector	S. Kaplan, Turkey
16:30 – 17:30	A practical method for the estimation of cell number: Physical and optical fractionator	B.Z. Altunkaynak, Turkey
17:30 – 19:00	<b>PRACTICE:</b> 2D disector and 2D unbiased sampling frame	O.G. Deniz, G. Altun, K.K. Yurt, A. Kocaman, A.A. Kaplan, Turkey
<b>19:00 – 20:00</b>	<b>DINNER</b>	<b>All</b>
20:00 – 21:30	<b>PRACTICE:</b> Disector counting technique application	O.G. Deniz, G. Altun, K.K. Yurt, A. Kocaman, A.A. Kaplan, Turkey

**Intensive  
Hands on Training Stereology  
Workshop  
3<sup>th</sup> December 2015  
Dubai, United Arab Emirates**

Time	Topic	Responsible Person
09:30 - 11:00	<b>PRACTICE:</b> Fractionator application	O.G. Deniz, G. Altun, K.K. Yurt, A. Kocaman, A.A. Kaplan, Turkey
<b>11:00 – 12:00</b>	<b>Coffee break</b>	<b>All</b>
12:00 - 13:00	Estimation of volume and volume fraction on macroscopic, microscopic and radiological sections	B. Sahin, Turkey
<b>13:00 – 14:00</b>	<b>LUNCH</b>	<b>All</b>
14:00 – 16:30	<b>PRACTICE:</b> Cavalieri application	A. Elfaki, M. Golpinar, O.G. Deniz, G. Altun, Turkey
16:30 – 17:00	Section thickness estimations	A.P. Turkmen, Turkey
<b>17:00 – 17:30</b>	<b>Coffee break</b>	<b>All</b>
17:30 – 18:00	Feedback and discussion	<b>All</b>

**2<sup>nd</sup> Asian and African Stereology Congress**  
Dubai – United Arab Emirates  
4th December 2015, Friday

Time	Topic	Responsible Person
<b>08:30-9:00</b>	<b>Registration</b>	
<b>09:10-9:20</b>	<b>Opening ceremony</b>	
<b>Chaired by:</b>	<b>A. Warilla, P. S. Etet, N. Acer</b>	
9:30-10:00	Using of the Cavalieri Principle in Clinical Studies	B. Şahin, Turkey
10:05-10:35	Quantitative MRI of the temporal lobe structures in patients with chronic schizophrenia: stereological study	A. Elfaki, Turkey
10:40-11:10	Quantitative morphology of the corpus callosum of ADHD using an atlas-based analysis	N. Acer, Turkey
<b>11:15-11:30</b>	<b>Tea Break</b>	<b>All</b>
<b>Chaired by:</b>	<b>A. Hayani, M. Farahna, B. Z. Altunkaynak</b>	
11:30-11:45	Whole tissue processing techniques for stereological analysis	S. Yürüker, Turkey
11:50-12:00	Whole tissue imaging and stereology	S. Yürüker, Turkey
<b>12:00-14:00</b>	<b>LUNCH</b>	<b>All</b>
<b>Chaired by:</b>	<b>A. Osinubi, M. Nurein, A. P. Türkmen</b>	
14:00-14:20	Are high impact journals suitable for groundbreaking works	P. F. S. Etet, Saudi Arabia
14:25-14:40	Effect of diabetes and ovariectomy on rat hippocampus (A biochemical and stereological study)	B. Unal, Turkey
14:45-15:00	Evaluation the neuroprotective effects of Boswellia sacra and folic acid on dentate gyrus in adult rats after 900 MHz electromagnetic field exposure: A stereological and histopathological study	G. Altun, Turkey
15:05-15:30	From cell to behavior and back to nature	M. Farahna, Saudi Arabia
<b>15:30-15:50</b>	<b>Coffee Break</b>	<b>All</b>
<b>Chaired by:</b>	<b>M. Nurein, B. Z. Altunkaynak, A. P. Türkmen</b>	
15:55-16:15	Controversies on electromagnetic field exposure and nervous system of children	A. Warilla, Saudi Arabia
16:20-16:40	Using images for quantitative analysis of organs or tissues: Some examples	B. Z. Altunkaynak, Turkey
16:45-17:00	The investigation of effects of $\beta$ -1,3-d-glucan on blood cells volumes on post-menopausal rats models by using stereological method	D. Unal, Turkey
17:05-17:20	Effects of omega 3 and melatonin on numbers of Purkinje cell and granular cell of cerebellum against electromagnetic field exposure: A stereological study	A. Kocaman, Turkey
17:25-17:40	Possible effects of Boswellia sacra and folic acid on Purkinje cell number in GSM modulated 900 MHz electromagnetic field exposed rats	O. G. Deniz, Turkey
17:45-18:00	Effects of omega 3 and melatonin on dentate gyrus following electromagnetic field exposure	B. Delibaş, Turkey
<b>18:00-18:20</b>	<b>Discussion</b>	<b>All</b>

**Stereology Workshop**  
Dubai – United Arab Emirates  
**5th December 2015, Saturday**  
**\*Two parallel sections will be held at the same day**

<b>Time</b>	<b>Topic</b>	<b>Responsible Person</b>
9:00-9:30	Microscopy, Tissue & Tissue Processing: Overview	M. Farahna, Kingdom of Saudi Arabia
9:35-10:25	Introduction to stereology and sampling strategy in stereology	S. Kaplan, Turkey
10:30-11:30	Stereological estimation of peripheral nerve fibers	O.G. Deniz, Turkey/S. Geuna, Italy
<b>11:30-11:45</b>	<b>Coffee Break</b>	<b>All</b>
11:45-12:30	Estimation of particle number on physical and optical sections: Physical and optical Dissector	S. Kaplan, Turkey
12:35-13:30	How to estimate neuronal minicolumnarity, neuronal direction and neuronal shape using design-unbiased stereology	J. R. Nyengaard, Denmark
<b>13:30-15:00</b>	<b>LUNCH</b>	<b>All</b>
15:00-15:30	Estimation of volume and volume fraction on macroscopic and radiological sections	A. Elfaki, Turkey
15:35-16:30	Basic principles of the brain segmentation and demonstration of the software for image analysis	B. Şahin, Turkey
<b>16:30-16:45</b>	<b>Coffee Break</b>	<b>All</b>
16:45-17:15	Choosing appropriate stereological method	A. Kocaman, Turkey
17:20-17:45	Evaluation of stereological data: Coefficient error and coefficient variation	B.Z. Altunkaynak, Turkey
17:45-18:00	<b>Feedback and closing ceremony of stereology workshop</b>	<b>All</b>

**7th International  
Scientific Writing & Publication  
Dubai – United Arab Emirates  
5th December 2015, Saturday**  
\*Two parallel sections will be held at the same day

Time	Topic	Responsible Person
09:30 – 10:00	How to write a win grant proposal?	P. F. S. Etet, Buraydah, Kingdom of Saudi Arabia
10:00 – 10:30	Requirements for success in scientific publication	A. Hayani, Saudi Arabia
10:30 – 11:00	Tips of subject selection in researches	B. Sahin, Samsun, Turkey
11:00– 11:30	How can we find a source for a research project?	A. Adem, Dubai, United Arab Emirates
<b>11:30-11:45</b>	<b>Tea Break</b>	<b>All</b>
11:45 – 12:15	Selecting title and writing abstract and introduction of manuscript	M. N. Elamin, Sudan
12:15 – 12:45	Writing of materials and methods	A. Osinubi, Nigeria/B.Şahin, Turkey
12:45 – 13:15	How to make a quantitative graph and writing of the discussion	B.Z. Altunkaynak, Turkey
<b>13:15 – 14:15</b>	<b>Lunch</b>	
14:15 – 14:45	Improving scientific writing --The case of mobile phones and health	D. Davis, Washington, United States
14:45 – 15:15	Selection of a journal for the manuscript	K. K. Yurt, Samsun, Turkey
15:15 – 15:30	Impact factor	A. A. Kaplan, Samsun, Turkey
15:30 – 15:45	How can we search and use references for a study? And <i>h index</i>	K. K. Yurt, Samsun, Turkey
<b>15:45 – 16:00</b>	<b>Coffee Break</b>	
16:00 – 16:30	Which points are important for editors and how should it respond to reviewers' views?	S. Kaplan, Turkey
16:30 – 17:00	Win-win thinking is essential for professional success	M. Farahna, Kingdom of Saudi Arabia
<b>17:05-17:30</b>	<b>Feedback and closing ceremony of scientific writing</b>	

---

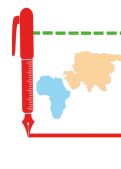
## ORAL PRESENTATIONS

---





2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Are high impact journals suitable for groundbreaking works?

Paul F. Seke Etet<sup>a,b</sup>

*Department of Basic Health Sciences, College of Applied Medical Sciences, Qassim University, Buraydah, Saudi Arabia*

**\*Current address:**

<sup>a</sup>*Department of Biomedical Sciences, University of Ngaoundere, Ngaoundere, Cameroon*

<sup>b</sup>*Center for Sustainable Health and Development, Garoua, Cameroon*

---

#### PRESENTATION INFO

#### ABSTRACT

**\* Correspondence to:**

Paul F. Seke Etet  
Department of Biomedical  
Sciences,  
University of Ngaoundere,  
Ngaoundere,  
Cameroon

e-mail: paul.seke@gmail.com

---

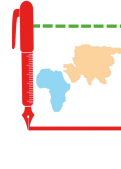
**Keywords:**

Countries  
Developing  
Groundbreaking works  
High impact academic journals

High impact academic journals, as determined by citation indexes like the impact factor, are highly influential in a field. We addressed whether high impact journals are suitable for groundbreaking works, particularly in developing countries. High impact journals reputedly publish manuscripts with high percentage of novelty and contain excellent science that interest a broad audience. For some scholars, “it is better to publish one paper in a quality journal than multiple papers in lesser journals”. However, although these journals may help to be known in the field as someone doing “important” research, many studies suggested that such role of journals is overrated, considering that recognition in a field comes with time and requires contribution to scientific events. In addition, the increase in visibility of the work performed they offer can also be achieved through open access journals, with less efforts and at a lesser cost. Moreover, some people publish in high impact journals to be promoted or achieve tenure. However, additional skills beyond publication are required for this end, and unfortunately, the desire to publish in these journals has increased the incidence of misconduct in the scientific community. We conclude that publishing in high impact journals may have a tremendous positive impact on a career, but one should be prepared for numerous rejections, keeping in mind that groundbreaking works may not be appreciated appropriately due to high submission rates. For the sakes of visibility, researchers of developing countries in particular should try publishing open access in non-tier one high impact journals.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Estimation of the volume and volume fraction on macroscopic and radiological sections

Amani Elfaki\*, Bunyamin Sahin

*Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

---

#### PRESENTATION INFO

**\* Correspondence to:**

Amani Elfaki  
Department of Anatomy,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: amanielfaki@gmail.com

#### ABSTRACT

Size changes of the brain is monitored for clinical or research purposes. Stereological methods provide some techniques to obtain quantitative information about the size of the brain or size relation of its components within the whole. The Cavalieri principle is the main technique to estimate the volume of brain and its components. Using this technique, the volume of any object could be estimated from a set of slices through the object, provided that they are parallel, separated by a known distance. The cut surface areas of the sections are assessed and the multiplication of the total cut surface area with the mean of the section thickness provides an estimation of the volume of the examined object. The point-counting and planimetry are two methods for the assessment of sectional cut surface areas in the Cavalieri principle. Sometimes, the volume of brain could not provide comparative information among the groups. Scientists have documented several factors that contribute to the size of brain. Factors related to brain growth, such as gender and physical size, are thought to influence the maximal size of an individual's brain. Comparing solely the brain volumes or its components between two groups will not provide reliable data. At this point the volume fraction method of stereological approaches proposes the solution. The volume fraction is simply expressed as the fraction of component within the reference volume. Both methods could be used digitally or they can be applied on the printed films. There are many studies describing the techniques and its applications. However, mostly they contain advanced information that is not suitable to be digested by newcomers. In the present study we gave simple information on the application of both techniques. We also discussed the factors affecting the volume estimations on radiological images. Examples of applications and their solutions are also provided.

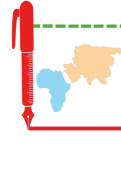
---

**Keywords:**

Brain  
Computed tomography  
Imaging  
Magnetic resonance  
Stereology  
The cavalieri principle  
Volume  
Volume fraction



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### The effect of bortezomibe on volumes of white blood cells in ovariectomized rats: Stereological study

Deniz Unal<sup>a</sup>, Bunyami Unal<sup>a\*</sup>, Tugba Bal<sup>a</sup>, Erdem Toktay<sup>a</sup>, Tolga Mercantepe<sup>b</sup>

<sup>a</sup>Department of Histology and Embryology, Faculty of Medicine, Ataturk University, Erzurum, Turkey

<sup>b</sup>Department of Histology and Embryology, Faculty of Medicine, Recep Tayyip Erdogan University, Rize, Turkey

---

#### PRESENTATION INFO

#### ABSTRACT

---

##### \* Correspondence to:

Bunyamin Ünal  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ataturk University,  
Erzurum, Turkey

e-mail: bunyamiunal@gmail.com

---

##### Keywords:

Blood Cells  
Bortezomibe  
Menopause  
Oxidative Stress  
Rat  
Stereology

In this study, we aimed to show effects of Bortezomib on volume of polymorphonuclear leukocytes, large and small lymphocytes on ovariectomized rat by an stereological method that nucleator. 20 weeks old, 20 Sprague-Dawley female rats were caged into five groups (n=5), control group (C-Group), ovariectomized group (Ovx-group), ovariectomized + 17- $\beta$  estradiol group (Ovx-E2 group), ovariectomized + bortezomib (0,1 mg /kg) group (Ovx+BL group), ovariectomized + bortezomib (0,2 mg /kg) group (Ovx+BH group). Bortezomib (ip, twice a week) were applied 3 months. At the end of the experiment peripheral blood smears were dyed Giemsa. Polymorphonuclear leukocytes, large and small lymphocytes volumes were estimated via the nucleator probe. The stereological results were examined statistically with One ANOVA-Tukey test. The volumes ( $\mu\text{m}^3$ ) were 278, 429.52, 494.21, 138.55 and 291.16 for polymorphonuclear leukocytes, 61.71, 96.96, 59.30, 55.01 and 73.86 for volumes of large lymphocytes, 25.74, 40.16, 32.65, 23.51 and 52.10 for small lymphocytes, respectively. Significant increase of volumes of polymorphonuclear leukocytes for Oxv-group and Oxv-E<sub>2</sub> group and significant decrease the volumes of Oxv+BL group (p <0.05); significant increase the volumes of large lymphocytes for Oxv-group (p <0.05); significant increase the volumes of small lymphocytes for Oxv-group and Oxv+BH group (p <0.05) were statistically detected. Finally, we suppose that ovariectomy increases volume in the white blood cells in the rats and low-dose Bortezomib can be normalized, however, high-dose Bortezomib isn't efficient.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Evaluation the neuroprotective effects of *Boswellia sacra* and folic acid on dentate gyrus in adult rats after 900 MHz electromagnetic field exposure: A stereological and histopathological study

Elfide Gizem Kıvrak, Berrin Zuhul Altunkaynak, Işınsu Aydın, Kıymet Kubra Yurt, Adem Kocaman, Aysin Pınar Turkmen, Mehmet Emin Onger, Gamze Altun\*, Suleyman Kaplan

*Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

#### PRESENTATION INFO

#### ABSTRACT

**\* Correspondence to:**

Gamze Altun  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: gamzeyayla.omu@gmail.com

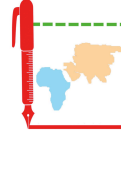
**Keywords:**

*Boswellia sacra*  
Dentate gyrus  
Electromagnetic field  
Folic acid

Technological development has been increased rapidly as an essential part of the modern life. Mobiles phones is one of the products of these technological development and at the same time one of the source of electromagnetic field. The current study is centred on evaluation of the effects of exposure to mobile phone emitting 900-MHz EMF on the dentate gyrus. Additionally, the main aim of the study is to examine neuroprotective effects of *Boswellia sacra* (BS) and Folic Acid (FA) against to EMF exposure. In this study, 36 adult male Wistar albino rats weighing between 250–280 g were used in this study. The animals were divided into six groups; each group consist of Cont, EMF, FA, BS, EMF+FA, EMF+BS. The number of granular cells in the dentate gyrus was estimated using by the optical fractionator method. The DCX and Ki 67 antibodies were used for the immunohistochemical study of the paraffin-embedded dentat gyrus samples. Values among the groups were analysed using One-way ANOVA. The mean granular cell number in dentate gyrus was concluded by optical fractionation method. The granular cell number in the EMF group was decreased when comparing with that of the *CONT* group ( $p<0.05$ ).Accordingly, most of Ki 67 positive cells were observed in the EMF+BS group. Additionally, the positivity of both antibodies DCX and Ki 67 was at lowest level in dentate gyrus samples in the hippocampus of the EMF group. EMF caused to harmful effects on the dentate gyrus region of hippocampus and the neuroprotective effects of FA and BS were observed by stereological and immunohistochemical methods.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Controversies on electromagnetic field exposure and the nervous systems of children

Aymen A. Warille\*, M. Emin Onger, A. Pınar Turkmen, Omur Gulsum Deniz, Gamze Altun,  
K. Kubra Yurt, Berrin Zuhale Altunkaynak, Suleyman Kaplan

*Department of Histology and Embryology, Medical School, Ondokuz Mayıs University, Samsun, Turkey*

---

#### PRESENTATION INFO

**\*Correspondence to:**

Aymen A. Warilla  
Department of Histology and Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: aymwar88@gmail.com

---

#### ABSTRACT

The objective of this review paper was to raise awareness about exposure to low levels of electromagnetic field (EMF) in children, arising from electrical power sources and mobile phones. This exposure may lead to the cognitive and behavioral impairment of brain function; therefore, being aware of these dangers is important to the healthy developmental process of children. When the current data were considered in detail, it was noted that children are not more or less sensitive to EMFs emitted by wireless devices, when compared to adults. Overall, the information about absorption in the crania of children and adults in the literature is not clear.

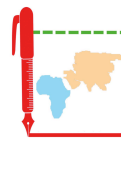
---

**Keywords:**

Children  
Electromagnetic field  
Health risk  
Mobile communication



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Using images for quantitative analysis of organ or tissues: Some examples

Berrin Zuhall Altunkaynak

*Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

---

#### PRESENTATION INFO

##### Correspondence to:

Berrin Zuhall Altunkaynak  
Department of Histology and Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: berrinzuhall@gmail.com

---

##### Keywords:

Imaging  
Microscopy  
Quantification  
Stereology

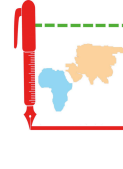
---

#### ABSTRACT

Nowadays, scientific methods are increasing and diversifying in medical researches. In this case, it is inadequate to produce scientific studies with imaging only in branches such as anatomy histology and radiology working on images. The use of devices that make visual and quantitative evaluation of images possible is popular, but the cost of such devices makes it difficult to use such technology. For all these reasons, stereological methods become a preferable method in scientific studies because they are easy to apply and do not require much technology. In addition to all these advantages, stereological methods are very reliable. In order to apply these methods, two-dimensional images obtained from 3-dimensional objects must be processed carefully. This process varies according to the method to be applied. For example, if the volume is to be evaluated, it is necessary to obtain and display serial sections from 3-D samples. These images can be macroscopically slicing the pieces, MRI or CT images, or microscopic sections. For particle counting, cross-sectional pairs called the disector pairs are used which are adjusted to the particle size. In this presentation, it is aimed to present examples of images used in detailed quantitative analysis.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### The investigation of effects of $\beta$ - 1,3- D- glucan on blood cells volumes on postmenopausal rats models by using stereological method

Deniz Unal<sup>a\*</sup>, Bunyami Unal<sup>a</sup>, Erdem Toktay<sup>a</sup>, Tugba Bal<sup>a</sup>, Tolga Mercantepe<sup>b</sup>

<sup>a</sup>Department of Histology and Embryology, Faculty of Medicine, Ataturk University, Erzurum, Turkey

<sup>b</sup>Department of Histology and Embryology, Faculty of Medicine, Recep Tayyip Erdogan University, Rize, Turkey

---

#### PRESENTATION INFO

##### \*Correspondence to:

Deniz Ünal  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ataturk University,  
Erzurum, Turkey

e-mail: deniz2071@gmail.com

---

##### Keywords:

Diabetes  
Hippocampus  
Menopause  
Oxidative Stress  
Rat  
Stereology

---

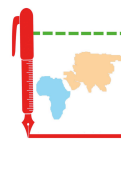
#### ABSTRACT

In this study, we aimed to detect the effects of  $\beta$ -1,3-D-glucan on white blood cell volume during postmenopausal period, experimentally. 20 weeks old, 20 Sprague- Dawley rats were divided into four groups (n=5 in each group), control group (C-Group), ovariectomized group (Ovx-group), ovariectomized + 17- $\beta$  estradiol treated group (Ovx-E2 group), ovariectomized +  $\beta$ -1,3-D-glucan treated group (Ovx+BG group). Ovariectomy surgery was applied on Oxv-group, Oxv-E2 group and Oxv+BG group. Also 17-beta estrogen (0,2 mg/kg p.o.) and  $\beta$ -1,3-D-glucan (100 mg/kg i.p) were administered to Oxv-E2 group and Oxv+BG group for 8 weeks after ovariectomy until the experiment finished, respectively. At the end of the experiment peripheral blood smears were prepared for Giemsa (Froti Dying method) and white blood cells (polymorphonuclear leukocytes, large and small lymphocytes) volumes were estimated for each animals via the nucleator probe. The sterological results were examined statistically with One ANOVA-Tukey test. The white blood cells volumes ( $\mu\text{m}^3$ ) were 270, 434.52, 466.71 and 138.55 for polymorphonuclear leukocytes, 62.21, 96.96, 59.80 and 69.18 for large lymphocytes, 25.24, 41.16, 32.90 and 33.38 for small lymphocytes, respectively. According to these results, we found that Oxv-group raised volumes of large lymphocytes, small lymphocytes and PMNL cells, otherwise Oxv+BG group showed control similar findings (p <0.05). We claimed that menopause raises volume in the white blood cells of the rats and  $\beta$ -1,3-D-glucan can be prevent this menopausal effects.





**2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates**



## Oral Presentation

### Effects of omega 3 and melatonin on numbers of Purkinje cell and granular cell of cerebellum against electromagnetic field exposure: Astereological study

**Gamze Altun<sup>a</sup>, Suleyman Emre Kocacan<sup>b</sup>, Omur Gulsum Deniz<sup>a</sup>, Elfide Gizem Kıvrak<sup>a</sup>, Aysin Pınar Turkmen<sup>a</sup>, Mehmet Emin Onger<sup>a</sup>, Berrin Zuhale Altunkaynak<sup>a</sup>, Cafer Marangoz<sup>b</sup>, Adem Kocaman<sup>a\*</sup>, Suleyman Kaplan<sup>a</sup>**

<sup>a</sup>Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>b</sup>Department of Physiology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

#### PRESENTATION INFO

#### ABSTRACT

##### \*Correspondence to:

Adem Kocaman  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail:ademkocaman@gmail.com

##### Keywords:

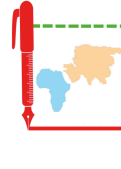
Cerebellum  
Electromagnetic field  
Melatonin  
Omega-3  
Stereology

In the last century, with the discovery of practical applications and novel devices that use electromagnetic energy, such as mobile phones, infrared and radio communicators, lasers, electrical transmission lines, electromagnets, and electronic devices, the environment where we live has been gradually and increasingly invaded by artificial sources. Some can have obvious detrimental effects, such as the cooking of biological matter by microwave ovens, while others appear to have no effect at all, such as the small wireless signal we use to open garage doors. More recently, due to the enormous growth of wireless mobile communication, especially mobile phones, worry about the possible effect of such radio base stations and the use of handheld devices began to appear, and leading to the increase in scientific investigations. Following the EMF exposure, increased free radicals cause deterioration of membrane integrity by acting on proteins and nucleic acids. Also, it leads to gene mutations, cell proliferation and differentiation, apoptosis. Therefore effects of oxidative damage could be investigated using by various indirect methods. In this century, it is impossible to avoid exposure to EMF. At this point, efficiency of melatonin (Mel) and omega 3 ( $\omega$ -3) come into prominence as an antioxidants. In the present study, we aimed to determine the effects of 900 MHz EMF exposure on Purkinje and granular cells in cerebellum of adult rats. Also, we aimed to determine the neuroprotective effects of Mel and  $\omega$ -3 against the effects of EMF on cerebellum. Selected animals were randomly divided into four equal groups (n=6). The Cont group that was not exposed to any procedure; the EMF group, exposed to 900 MHz electromagnetic field for 1h/day group; the EMF+Mel group, 50 mg/kg/day Mel (Sigma-Aldrich Comp., St Louis, MO, USA) injected intraperitoneally (i. p.) group during 900 MHz electromagnetic field exposure time (Jahnke et al., 1999) and the EMF+ $\omega$ 3 group, animals fed with standard feed added  $\Omega$ 3 substances (Sigma Chemical Comp., St Louis, MO, USA) %10 of standard feed. Purkinje cells and granular cells were estimated using the optical fractionator, which is one of unbiased stereological techniques, by stereoinvestigator analysing system. GSH, CAT and SOD enzyme activities have determined at respectively 410 nm, 540 nm, and 450nm. When the Purkinje cell numbers of the groups were estimated, although a highly significant decrease in EMF group compared to other study groups (p<0.01) there is no significantly difference EMF+Mel and Cont, EMF+ $\omega$ 3 and Cont (p> 0.05) Similarly, in terms of granular cell numbers for each group, there was no significantly difference EMF+Mel and Cont, EMF+ $\omega$ 3 and Cont, EMF and Cont (p> 0.05). Similarly, there was no significantly difference between EMF+ $\omega$ 3 and EMF+Mel groups. Also, the activities of CAT, total GSH, and SOD in serum among EMF, Cont, EMF+Mel, EMF+ $\omega$ 3 (A-C) was shown by using spectrophotometer. There was no significantly difference between Cont and EMF+ $\omega$ 3 in terms of CAT and total GSH activities. Additionally, Serum SOD activity did not show statistically significant differences among the Cont, EMF+Mel, and EMF+ $\omega$ 3 (p> 0.05). There was highly significant increase in serum enzyme activities of EMF compared to other study groups (p <0.01). When examined the serum CAT and total GSH activities of EMF+Mel, there was highly significant In conclusion, EMF reduced number of Purkinje cells and granular cells in cerebellum increase in comparison with Cont and EMF+ $\omega$ 3 (p <0.01). Using Mel and  $\omega$ -3 have neuroprotective effect if used after EMF exposure.





2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Possible effects of *Boswellia sacra* and folic acid on Purkinje cell number in GSM modulated 900 MHz electromagnetic field exposed rats

Omur Gulsum Deniz\*, Elfide Gizem Kıvrak, Berrin Zuhale Altunkaynak, Işınsu Aydın, Kıymet Kubra Yurt, Adem Kocaman, Aysın Pınar Turkmen, Mehmet Emin Onger, Suleyman Kaplan

Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

#### PRESENTATION INFO

##### \*Correspondence to:

Omur Gulsum Deniz  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: omur.denizomu@gmail.com

##### Keywords:

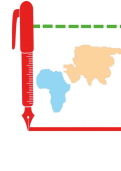
Cerebellum  
Electromagnetic field  
Oxidative stress  
Rat  
Stereology

#### ABSTRACT

The biological effects of electromagnetic field (EMF) exposure from mobile phones is a growing concern among scientists. The aim of the present study was to determine the effects of exposure to 900 MHz EMF on Purkinje cell number in the cerebellum. Also, we aimed to determine the protective effects of folic acid (FA) and *Boswellia sacra* (BS) against to effects of EMF on Purkinje cell number. In this study, 36 adult male *Wistar albino* rats weighing between 270–300 g were used in this study. The animals were divided into six groups; each group consist of Cont, EMF, FA, BS, EMF+FA, EMF+BS. The number of Purkinje cells in the cerebellum was estimated using by the optical fractionator method. Histopathological evaluations were also performed. Values among the groups were analysed using One-way ANOVA. Our study showed that; EMF reduced number of Purkinje cells in cerebellum. Also; FA and BS have neuroprotective effect if it uses after EMF exposure. And using FA alone has no neurotoxic effect on cerebellar Purkinje cells. Additionally; using BA alone has no neurotoxic effect on cerebellar Purkinje cells. Furthermore; our stereological findings were supported by histopathological results. When compared to control and EMF groups we can say that EMF had side effects on Purkinje cell number. At this point; remarkable decrease could be seen in EMF group. Also, when we looked at to the BS and FA giving groups after EMF exposure we can say that BS and FA had neuroprotective effects on number of Purkinje cell. The findings of our current study may encourage researchers to evaluate the chronic effects of 900 MHz EMF on the cerebellum. Additional experimental studies are necessary to define the exact mechanism of EMF with different duration on the cerebellum.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



## Oral Presentation

### Effects of melatonin and omega-3 on number of granular cells of the rat dentate gyrus exposed to electromagnetic field (EMF)

Gamze Altun<sup>a</sup>, Suleyman Emre Kocacan<sup>b</sup>, Omur Gulsum Deniz<sup>a</sup>, Elfide Gizem Kivrak<sup>a</sup>, Aysin Pınar Turkmen<sup>a</sup>, Mehmet Emin Onger<sup>a</sup>, Berrin Zuhale Altunkaynak<sup>a</sup>, Cafer Marangoz<sup>b</sup>, Burcu Delibas<sup>a\*</sup>, Suleyman Kaplan<sup>a\*</sup>

<sup>a</sup>Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>b</sup>Department of Physiology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

#### PRESENTATION INFO

##### \*Correspondence to:

Burcu Delibaş  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: burcu.delibas@omu.edu.tr

##### Keywords:

Dentate gyrus  
Electromagnetic field  
Melatonin  
Omega-3  
Stereology

#### ABSTRACT

Nowadays; free electromagnetic field (EMF) is quite high in outdoor with the discovery of novel devices. This source leads proliferation of free radicals in intracellular area by means of reactive oxygen species (ROS). Melatonin and omega-3 ( $\omega$ -3) are two well-known antioxidative agents in recent literature. The aim of our study was to investigate the cellular effects of 900 MHz EMF exposure and neuroprotective efficiency of Mel and  $\omega$ -3 on damaged granular cells in dentate gyrus of adult rats. For this purpose; selected animals were randomly divided into four equal groups ( $n=6$ ). The Cont group that was not exposed to any procedure; the EMF group, exposed to 900 MHz electromagnetic field for 1h/day group; the EMF+Mel group, 50 mg/kg/day Mel (Sigma-Aldrich Comp., St Louis, MO, USA) injected intraperitoneally (i. p.) group during 900 MHz electromagnetic field exposure time (Jahnke et al., 1999) and the EMF+ $\omega$ 3 group, animals fed with standard feed added  $\Omega$ 3 substances (Sigma Chemical Comp., St Louis, MO, USA) %10 of standard feed. Granular cells were estimated using the optical fractionator, which is one of unbiased stereological techniques, by stereoinvestigator analysing system. GSH, CAT and SOD enzyme activities have determined at respectively 410 nm, 540 nm, and 450nm. When the granular cell numbers of the groups were estimated, although a highly significant decrease in EMF group compared to other study groups ( $p<0.01$ ), in terms of granular cell numbers for each group, there was no significant difference between EMF+Mel and Cont, EMF+ $\omega$ 3 and Cont, EMF and Cont ( $p>0.05$ ). Similarly, there was no significant difference between EMF+ $\omega$ 3 and EMF+Mel groups. Also, the activities of CAT, total GSH, and SOD in serum among EMF, Cont, EMF+Mel, EMF+ $\omega$ 3 (A-C) was shown by using spectrophotometer. There was no significant difference between Cont and EMF+ $\omega$ 3 in terms of CAT and total GSH activities. Additionally, Serum SOD activity did not show statistically significant differences among the Cont, EMF+Mel, and EMF+ $\omega$ 3 ( $p>0.05$ ). There was highly significant increase in serum enzyme activities of EMF compared to other study groups ( $p<0.01$ ). When examined the serum CAT and total GSH activities of EMF+Mel, there was highly significant increase in comparison with Cont and EMF+ $\omega$ 3 ( $p<0.01$ ). In conclusion, EMF reduced number of granular cells in dentate gyrus. Using Mel and  $\omega$ -3 have neuroprotective effect if used after EMF exposure.

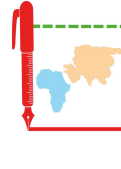
---

## POSTER PRESENTATIONS

---



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



**Poster**

**The antioxidant effects of omega-3 on adrenal gland exposed to 900 Mhz electromagnetic field**

**Adem Kocaman\*, Işinsu Alkan, Sefa Ersan Kaya, Gulay Yıldız, Gamze Altun, Mehmet Emin Onger, Aysın Pınar Turkmen, Berrin Zuhul Altunkaynak, Suleyman Kaplan**

*Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

---

**PRESENTATION INFO**

**\*Correspondence to:**

Adem Kocaman  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: ademkocaman@gmail.com

---

**ABSTRACT**

Recently, electric and magnetic fields (EMF) surround all of our daily life by their manmade useful facilities. We are continuously exposed of possible adverse effects of EMF which is caused by transmission lines, mobile phones, and electricity devices exist wherever electricity is used or generated. Omega-3 is participated in the cell membrane structure, therefore it plays critical role for cell movement, receptor placement and maintaining cell membrane integrity and fluidity. The adrenal corticoid response to EMF stimulation was firstly performed in the late 60s by Barnothy. Furthermore, the protective effects of omega-3 on the adrenal gland are still unclear. The aim of this study was to investigate the harmful effects of exposure of 900 megahertz (MHz) electromagnetic field (EMF) on adrenal gland of rats and the protective effects of omega-3 ( $\omega$ -3). We used 18 Wistar albino which were 12-week old and weighing 230–280 g. Animals housed separately in plastic cages,  $22 \pm 2$  °C, under a 12/12-h light/dark cycle and the humidity ratio was kept at about 40–50%. Animals were randomly divided into three equal groups: the control group (CG) (n = 6), EMF exposed group (EG) (n = 6) which were exposed to 900 MHz EMF 1 h/day for 15 days in an exposure tube, and EMF+Omega-3 exposed group (EOG) (n = 6) which were exposed to 900 MHz EMF 1 h/day for 15 days in an exposure tube and during this time they were fed with omega-3 enriched rat chow. At the end of the 15 days, the animals were anaesthetized. Sections were cut at 20-mm thicknesses from the blocked adrenal glands by using a rotary microtome (Leica RM 2135, Leica Instruments, Nussloch, Germany). Each section was stained with hematoxylin-eosin staining (H-E) for stereological analysis which is performed by using Stereo Investigator software version 9.0 (Micro Bright Field Inc., Colchester, VT, USA). Stereological results showed that the mean volume of the adrenal gland was significantly increased in the EMF-exposed groups compared to the Cont group. Additionally, the mean volume of adrenal gland was significantly lower in EMF-W3 groups compared to the EMF group. As a result of the data which was computed with unbiased Cavalieri principle, there was a significant difference when comparing the EMF-exposed group with the unexposed groups. Purpose of this study is to research the antioxidant effects of omega-3 on adrenal gland in rats which is exposed EMF by using stereological methods. In the zona fasciculata, the mean volume of EMF group was significantly higher than the Control and EMF-W3 groups but there were no differences between the Control and EMF-W3 groups. In conclusion, the use of EMF emitting devices has been increasing day by day and exposure to EMF significantly increased the volume of adrenal gland, especially that of ZF in rats and it is considered that EMF is considered a stress factor as a result of tissue damage (Bas, Odaci, Mollaoglu, et al., 2009). Present results showed that the adrenal gland is sensible to EMF and omega-3 has protective effects against EMF. We suggested that our experimental model may be useful for further experiments for explaining the mechanism of interaction among EMF, omega-3 and adrenal gland.

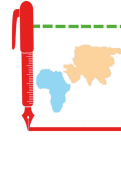
---

**Keywords:**

Adrenal gland  
Antioxidant effect  
Electromagnetic field  
Omega-3  
Stereology



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



Poster

**The influence of the omega-3 fatty acids on the liver exposed to 900 Mhz electromagnetic field in rats: A stereological study**

**Ahmad Yahyazadeh\*, Işın Alkan, Adem Kocaman, Gamze Altun, Muhammed Eyup Altunkaynak, Mehmet Emin Onger, Berrin Zuhale Altunkaynak, Suleyman Kaplan**

*Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

**PRESENTATION INFO**

**\*Correspondence to:**

Ahmad Yahyazadeh  
Department of Histology and Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: yahyazadeh.ahmad@yahoo.com

**Keywords:**

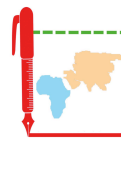
Antioxidant effect  
Electromagnetic field  
Heart  
Omega-3  
Stereology

**ABSTRACT**

Electromagnetic field (EMF) waves have considerably been enhanced in environment. Also because of their interaction with body's EMF, irreversible damages are imposed on the living tissues. The current study assessed the omega-3 fatty acids (W-3) on liver of rats exposed to EMF. In this study, 18 adult male Wistar albino rats were used in three groups including control (CONT), EMF, EMF+W-3. Both EMF and EMF+W-3 groups exposed to 900 megahertz (MHz) EMF for one hour per day during 15 days. Additionally EMF+W-3 group was nourished with pellet containing %10 fish oil. CONT group was not applied to any treatment. For the stereological and histopathological study, liver tissues were dissected at the end of application. Relied on quantitative data, significant findings were elicited from liver region of interest to have been selected systematically and randomly. Results exhibited that mean total volume of portal triad was substantially alleviated in EMF group than CONT and EMF+W-3 groups. In contrast, those were increased in EMF+W-3 than the CONT group. Mean total volume of central vein was not significantly different between the EMF group and CONT group, and also that was remarkably enhanced in the EMF+W-3 group than CONT and EMF groups. Additionally, histopathological results confirmed our stereological findings. In EMF group, distinctive alterations were distinguished in comparison with rest groups. Our results relied on particularly stereological approach indicated that EMF exposure has hazardous effects on liver. Therefore, it is required that the use EMF emitting electronic devices are more controlled and conscious.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



Poster

**Volumetric MRI study of superior and transverse temporal gyri and their relation to the clinical symptoms in schizophrenics**

Amani Elfaki<sup>a\*</sup>, Tahir Osman Ali<sup>b</sup>, Abdelgani Elsheikh<sup>b</sup>, Murat Golpınar<sup>a</sup>, Meltem Acar Gudek<sup>a</sup>,  
Bunyamin Sahin<sup>a</sup>

<sup>a</sup>Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>b</sup>Departments of Anatomy and Psychiatry, Faculty of Medicine, National Ribat University, Sudan

**PRESENTATION INFO**

**ABSTRACT**

**\* Correspondence to:**

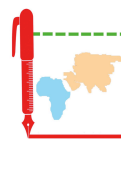
Amani Elfaki  
Department of Anatomy,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail: amanielfaki@gmail.com

**Keywords:**

Automatic brain segmentation  
Positive and negative symptoms scale  
Magnetic resonance imaging  
Schizophrenia  
Superior temporal gyri  
Transverse temporal gyri

Superior and transverse temporal gyri are believed to be an important anatomical region for schizophrenia. The aim of this study was to evaluate changes in the superior and transverse temporal gyri in schizophrenic patients using brain segmentation and to correlate the changes with clinical symptoms of patients as measured with the positive and negative symptoms scale. 88 control subjects and 57 chronic schizophrenics were participated in the study. Structural MRI was performed and the DICOM images were evaluated using automatic brain segmentation software (BrainSuite). The volume and volume fraction of the region of interest were evaluated between the groups. The relations between the symptoms and anatomical structures were investigated. The volumes of gray and white matter of the superior temporal gyri were smaller in the schizophrenic than the controls both for males and females ( $21.80 \pm 2.94 \text{ cm}^3$  and  $19.22 \pm 2.62 \text{ cm}^3$ ) and ( $10.63 \pm 1.53 \text{ cm}^3$  and  $9.21 \pm 1.43 \text{ cm}^3$ ), respectively. While, grey and white matter of transverse temporal gyri ( $3.65 \pm 0.92 \text{ cm}^3$  and  $3.24 \pm 0.99 \text{ cm}^3$ ) and ( $1.80 \pm 0.37 \text{ cm}^3$  and  $1.59 \pm 0.33 \text{ cm}^3$ ), respectively, were less in males schizophrenic than males control ( $P < 0.050$ ). Male patients tend to have significant correlation with positive symptoms ( $P < 0.050$ ), while female patients tend to have significant correlation with negative symptoms ( $P < 0.050$ ). Our findings link the pathophysiological changes in the superior and transverse temporal gyri with clinical symptoms of patients. These data are consistent with the intention that dysfunction of the primary auditory cortex may play a role in the production of hallucinatory behavior and poor organization of thought in schizophrenics.



## Poster

### Gender sensitivity of the colossal abnormalities associated with behavioural changes of schizophrenics

Amani Elfaki<sup>a\*</sup>, Tahir Osman<sup>b</sup>, Murat Golpinar<sup>a</sup>, Mert Nahir<sup>a</sup>, Alaa Ibrahim<sup>a</sup>, Bunyamin Sahin<sup>a</sup>

<sup>a</sup> Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>b</sup> Department of Anatomy, Faculty of Medicine, National Ribat University, Khartoum, Sudan

#### PRESENTATION INFO

##### \* Correspondence to:

Amani Elfaki  
 Department of Anatomy,  
 Faculty of Medicine,  
 Ondokuz Mayıs University,  
 Samsun, Turkey

e-mail: amanielfaki@gmail.com

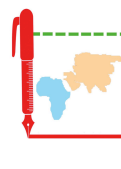
#### ABSTRACT

The intention of this research will be dedicated to study the callosal abnormality in schizophrenic patients at the structural and behavioural levels which have thus far been unable to reach a consensus. As improvements in imaging analysis techniques enhanced the detection of subtle differences in callosal structure and function in populations, a clearer picture of callosal abnormality in schizophrenia is most likely to be emerge. 57 (30 male- 27 female) schizophrenic patients and 88 (51 male -37 female) healthy controls were included in the study. Structural MR imaging was done for both patients and healthy controls. Morphometric measurements were conducted blindly to clinical data using ImageJ software. The Corpus Callosum CC was divided into seven subdivisions based on the established Witelson framework. The surface area of CC as well as the rostrum, genu, rostral body, anterior midbody, posterior midbody, isthmus, splenium of CC were measured on midsagittal slide using unbiased stereological methods. The comparison between the control and schizophrenic showed reduction of total and subdivisions of CC in patients, although the male results were not reach to a significant level. Within the females the control and patient ratio were (1.23 and 1.04cm<sup>2</sup>) in genu, (1.06 and 0.95cm<sup>2</sup>) anterior midbody, (1.04 and 0.93cm<sup>2</sup>) posterior midbody, (1.52 and 1.36cm<sup>2</sup>) splenium, and in total corpus callosum was (6.11 and 5.57cm<sup>2</sup>) respectively. In the present study there are significantly reduction in the colossal subdivisions among the schizophrenic females more than schizophrenic males. This reduced subdivisions which are functionally connecting the cognitive, emotional and memory areas between the two hemispheres. Those areas are active more in the females than males, and tend to be affected in female patients, which insure the gender sensitivity of this disorder.

##### Keywords:

Corpus Callosum  
 Magnetic Resonance Images  
 Midsagittal Surface area  
 Schizophrenia





## Poster

# Structural alteration of temporal lobe in autistic males using stereological methods on magnetic resonance images

Sahar Shareef<sup>a</sup>, Tahir Osman Ali<sup>a</sup>, Bunyamin Sahin<sup>b</sup>, Fatima ALhaider<sup>c</sup>, Amani Elfaki<sup>b\*</sup>

<sup>a</sup> Departments of Anatomy and Psychiatry, Faculty of Medicine, National Ribat University, Khartoum, Sudan

<sup>b</sup> Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>c</sup> Department of Psychiatry, Faculty of Medicine, King Saud University, Riyadh, Saudi Arabia

## PRESENTATION INFO

## ABSTRACT

### \* Correspondence to:

Amani Elfaki  
 Department of Anatomy,  
 Faculty of Medicine,  
 Ondokuz Mayıs University,  
 Samsun, Turkey

e-mail: amanielfaki@gmail.com

### Keywords:

Autism  
 MRI  
 Stereology  
 Temporal lobe

Current efforts toward understanding the nature, etiology, and treatment of autism involve collaboration among many scientists from multiple disciplines, each with its own perspective, method of inquiry, and scientific methods. The temporal lobe is considered as an interesting region to study because it is involved in a variety of conditions. In normal brain activities the temporal lobe is involved in the functions of memory, learning, language development and cognition (Afifi AK; Bergman RA 2005). Temporal lobe abnormality in autism is a probably candidate because the core symptoms of autism centers on deficits in language and social behavior, which are thought to be subserved by the temporal lobes. To study the structural alterations of the temporal lobe and its relevance to autism through measuring the volume, volume fraction, cortical areas, and pial surface area of temporal lobe, by applying stereological methods on magnetic resonance images in both autistic and healthy children. 10 male control subjects and 5 male autistic children were participated in the study. Structural MRI was done to both patients and healthy controls using Philips 1.5 Tesla scanner, Magnetom Avanto Vision System. T1- weighted images were obtained using three-dimensional acquisition by Magnetization Prepared Rapid Acquisition (MP-RA); it produces good grey/white matter contrast in a very short acquisition time. Slice distance is 0.7mm. Morphometric measurements were conducted blind to clinical data, using two softwares for measurement. ImageJ and Brain Suite softwares. ImageJ was used to assign the pixel number to the images and to reorient them. BrainSuite software was used for segmentation and volume estimation. BrainSuite is a collection of software tools that enable largely automated processing of magnetic resonance images (MRI) of the human brain. The 1<sup>st</sup> processing step in BrainSuite is the cortical surface extraction sequence (CSE), that automatically skull-strips the image (Figure 3-5); classifies white matter, grey matter, and CSF, and generates 3D models of the inner cortical and pial surfaces (Figure 3-6). 2<sup>nd</sup> step was registering the surfaces and volumes generated by the CSE Sequence to a brain atlas in the software (Figure 3-7). Later, a spread sheet was prepared, and the ROIs data were transferred to the sheet. Independent sample T-test was used to compare the mean volume, volume fraction, cortical areas, and pial surface area of temporal lobe between control and autistics. The MR images of subjects were analyzed quantitatively using the stereological methods. The results of mean volume and volume fraction of temporal lobes, mean volume of middle cortical and inner cortical, and pial surfaces were present in table 1. The right middle cortical and the right inner cortical areas were lower in autistic than control. The present study suggests that autistic children have a marked temporal deficit. Changes in specific areas may influence specific symptoms. Temporal middle and inner cortical areas disruption may play a crucial role in dysfunction of language and social behaviors of autistics. Further longitudinal studies on large samples could help in revealing most of the biological markers for autism.

Structures	Mean	Sig	Deviation	C	A
	Control	Autistic	Std.		
Right Temporal Lobe Volume	113	105.40	0.13	11.69	17.64
Left Temporal Lobe Volume	120	115.40	0.47	17.10	19.01
Volume Fraction of Right Temporal Lobe	22.08	21.64	0.42	0.82	0.64





## Poster

### Effects of diabetes and ovariectomy on rat hippocampus (a biochemical and stereological study)

Berrin Zuhall Altunkaynak<sup>a</sup>, Deniz Unal<sup>b</sup>, M. Eyup Altunkaynak<sup>a</sup>, Zekai Halici<sup>b</sup>, Yildiray Kalkan<sup>c</sup>, O. Nuri Keles<sup>b</sup>, Selina Aksak<sup>d</sup>, Jale Selli<sup>b</sup>, Bunyami Unal<sup>b\*</sup>

<sup>a</sup> Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

<sup>b</sup> Department of Histology and Embryology, Faculty of Medicine, Ataturk University, Erzurum, Turkey

<sup>c</sup> Department of Histology and Embryology, Faculty of Medicine, Recep Tayyip Erdogan University, Rize, Turkey

<sup>d</sup> Department of Histology and Embryology, Faculty of Medicine, Ataturk University, Erzurum, Turkey, Turkey

#### PRESENTATION INFO

##### \* Correspondence to:

Bunyami Ünal  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Atatürk University,  
Erzurum, Turkey

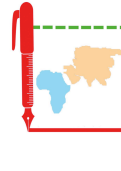
e-mail: bunyamiunal@gmail.com

##### Keywords:

Diabetes  
Hippocampus  
Menopause  
Oxidative Stress  
Rat  
Stereology

#### ABSTRACT

Oxidative stress is one of the main reasons of both menopause and diabetes. So, it plays crucial role in the pathogenesis of major complications of these condition and disease. Therefore, the objective of the present study was to investigate the effects of menopause and diabetes upon the hippocampus using a rat model. Adult female Sprague Dawley rats (n=24) were allocated randomly as follows; control (Group-C) ovariectomized (Group-O), diabetic (Group-D) and ovariectomy+diabetic groups (Group-OD) (n=6; for each group) respectively. For evaluating the results, tissue biochemistry and stereological analysis were made. Oxidant and antioxidant agent levels were detected in brain tissue biochemistry; 12.27, 21.88, 23.08 and 29.90 nmol/gr tissue for lipid peroxidase (LPO); 59.3, 70.06, 69.7 and 78.1 mmol/min/mg tissue for catalase (CAT); 174.2, 156.4, 159.7 and 154.6 mmol/min/mg tissue for superoxide dismutase (SOD); 3.63, 3.61, 4.21 and 3.97 nmol/mg tissue for total glutathione (GSH) and 5.05, 5.68, 5.58 and 6.19 µmol/min/mg tissue for myeloperoxidase. Total hippocampal neuron numbers counted 400608, 35399, 291832 and 239389, respectively. According to this stereological results, the total hippocampal of neurons were significant differences between the control and all other groups (Group O-DO) (P<0.001). We suggested that hippocampal neurodegeneration observed in rats previously subjected to experimental menopause and diabetes via oxidative stress, and may allow better of their underlying mechanism in human.



## Poster

### The general effects of melatonin on wistar rat hearts exposed to 900 Mhz electromagnetic field: A stereological study

Işinsu Alkan\*, Adem Kocaman, Erkan Erener, Gulay Yıldız, Gamze Altun, Aysin Pınar Turkmen, Mehmet Emin Onger, Berrin Zuhul Altunkaynak, Suleyman Kaplan

<sup>b</sup>Department of Histology and Embriology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

#### PRESENTATION INFO

#### ABSTRACT

##### \* Correspondence to:

Işinsu Alkan  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail:isinsuaydin@gmail.com

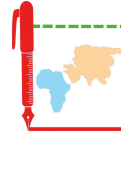
##### Keywords:

Antioxidant effect  
Electromagnetic field  
Heart  
Omega-3  
Stereology

Certain risks occurred with the increasing usage of mobile and electrical devices, as their usage causes EMF exposure to users. EMF is defined as changes in space while an electrical load moves through and there are many studies that observe short and long term effects of excessive exposure to it and these effects' connection with neurotoxic aspects of EMF. There are many studies about the short and long term effects of EMF exposure to heart. In studies based on electrocardiogram (ECG) waves, it was shown that being exposed to EMF is increasing T waves. However, none of the experiments on heart and EMF has ever studied the volume of the capillaries. MEL is a hormone that is secreted from the pineal gland and it functions in forming the circadian rhythm. In this study, we investigated the effects of EMF and MEL on heart capillaries by using the Cavalieri methods. The rats were randomly divided into 3 groups including control (CONT), EMF, and MEL. In EMF group, rats were exposed to 900 Mhz EMF for 15 days. Rats in the MEL group were subjected to i.p 50 mg/kg/day MEL treatment for 15 days. The volume of capillary in the heart was calculated by Cavalieri principle. This method is based on point counting. The stereological datas were evaluated using One-Way ANOVA test also post hoc comparison between groups was done using Bonferroni test. The stereological and statistical data showed that there was significant difference between CONT and EMF exposure groups ( $p<0.05$ ). There was highly significant difference between MEL and EMF exposure groups ( $p<0.05$ ). Otherwise; there was not any significant difference between CONT and MEL groups ( $p>0.05$ ). Histopathological result was not significant in any groups. Cardiac muscle fiber were shown branching and anastomosing in directions. The nuclei was central and normal in the myocardial cells, and the sarcoplasm appeared acidophilic and striated in all groups. Although exposure to EMF increases internal damage on capillary of heart this damage can be diminished at its minimum level by MEL treatment.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



Poster

**Stereological estimation of the upper incisor dental pulp volume in four week-old rats exposed to diclofenac sodium prenatal period**

**Murat Çetin Rağbetli<sup>a\*</sup>, Müşerref Çetin Aydoğan<sup>b</sup>, Necat Koyun<sup>c</sup>**

<sup>a</sup>Department of Histology and Embryology, Faculty of Medicine, Yüzüncü Yıl University, Van, Turkey

<sup>b</sup>Polatlı Government Hospital, Ankara, Turkey

<sup>c</sup>Department of Anatomy, Faculty of Medicine, Yüzüncü Yıl University, Van, Turkey

---

**PRESENTATION INFO**

**ABSTRACT**

**\*Correspondence to:**

Murat Çetin Rağbetli  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Yüzüncü Yıl University,  
Van, Turkey

e-mail: ragbetli@hotmail.com

---

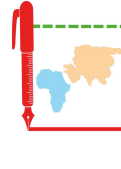
**Keywords:**

Dental pulp  
Diclofenac sodium  
Pregnancy  
Rats

The aim of our study is investigation of puppy tooth's enamel, dentin, cementum and pulp tissues volume that are exposed to diclofenac sodium that is analgesic, anti-inflammatory and antipyretic on postpartum 4 weeks rats by stereological methods. Pregnant rats were kept in a room with normal light and dark cycles (21±2°C) and fed with normal diet. The injections in the sham (1cc SF) and the experimental group (1mg/kg) were started on the fifty day of pregnancy and applied for 15 days. On the postnatal 28th day (between 3-4 weeks) the male and female offspring were separated into different cages. In our study, totally, 36 Wistar albino rats were used in the experimental, sham and control groups each having six male and six female rats. The animals are 4 weeks young they were perfused under deep anesthesia and teeth were removed. The teeth were decalcified. Teeth were embedded in paraffin after routine histological procedures. Tissue sections of about 5 microns thick were taken at regular intervals. The first section was chosen at random and approximately 10th section pairs were taken. The sections were stained with hematoxylin and eosin staining and modified method of Cavalieri's principle was used for stereological analysis. Pulp, dentin, odontoblasts all dental layer tissue volumes were measured with pointed field scale. As a result it was found that prenatally applied diclofenac sodium did not cause a statistically significant change in the day 28 young rat enamel, dentin, cementum, pulp and periodontium layer of teeth and total tissues volume compared to the control animals. In this study do not support the suggestion that diclofenac sodium is interferes with development of the tooth pulp. Further doses studies in these tissues are needed due to using in pregnancy.



2<sup>nd</sup> Asian and African  
STEREOLOGY CONGRESS  
and  
Intensive Hands on Training Stereology Workshop  
7<sup>th</sup> International  
SCIENTIFIC WRITING WORKSHOP  
and  
STEREOLOGY WORKSHOP  
2-5 December 2015  
Dubai  
United Arab Emirates



Poster

**Effects of folic acid and *Boswellia sacra* on the cerebellum of the adult rats exposed to 900 MHz radiation**

**Elfide Gizem Kıvrak, Berrin Zuhal Altunkaynak, Işınsu Aydın, Kıymet Kübra Yurt, Adem Kocaman, Aysin Pınar Turkmen, Mehmet Emin Onger, Omur Gulsum Deniz, Suleyman Kaplan**

*Department of Histology and Embryology, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey*

---

**PRESENTATION INFO**

**\* Correspondence to:**

Süleyman Kaplan  
Department of Histology and  
Embryology,  
Faculty of Medicine,  
Ondokuz Mayıs University,  
Samsun, Turkey

e-mail:skaplan@omu.edu.tr

---

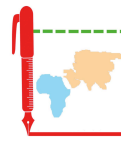
**Keywords:**

Cerebellum  
Electromagnetic field  
Oxidative stress  
Rat  
Stereology

---

**ABSTRACT**

The biological effects of electromagnetic field (EMF) exposure from mobile phones is a growing concern among scientists. The aim of the present study was to determine the effects of exposure to 900 MHz EMF on cerebellum. Also, we aimed to determine the protective effects of folic acid (FA) and *Boswellia sacra* (BS) against to effects of EMF on cerebellum. In this study, 36 adult male *Wistar albino* rats weighing between 270–300 g were used in this study. The animals were divided into six groups; each group consist of Cont, EMF, FA, BS, EMF+FA, EMF+BS. The number of Purkinje cells in the cerebellum was estimated using by the optical fractionator method. Histopathological evaluations were also performed. Values among the groups were analysed using One-way ANOVA. Our study showed that; EMF reduced number of Purkinje cells in cerebellum. Also; FA and BS have neuroprotective effect if it uses after EMF exposure. And using FA alone has no neurotoxic effect on cerebellar Purkinje cells. Additionally; using BA alone has no neurotoxic effect on cerebellar Purkinje cells. Furthermore; our stereological findings were supported by histopathological results. When compared to control and EMF groups we can say that EMF had side effects on Purkinje cell number. At this point; remarkable decrease could be seen in EMF group. Also, when we looked at to the BS and FA giving groups after EMF exposure we can say that BS and FA had neuroprotective effects on number of Purkinje cell. The findings of our current study may encourage researchers to evaluate the chronic effects of 900 MHz EMF on cerebellum. Additional experimental studies are necessary to define the exact mechanism of EMF with different duration on cerebellum.



## Poster

### Sex and age dependent changes of the cerebral cortex in young adult sudanese: A brain segmentation study

Wegdan Ahmed<sup>a\*</sup>, Tahir Osman<sup>b</sup>, Bunyamin Sahin<sup>c</sup>, Amani Elfaki<sup>c</sup>

<sup>a</sup>Department of Anatomy, Faculty of Medicine, National University, Khartoum, Sudan

<sup>b</sup>Faculty of Postgraduate Studies and Scientific Research, Ribat University, Khartoum, Sudan

<sup>c</sup>Department of Anatomy, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

#### PRESENTATION INFO

##### \* Correspondence to:

Wegdan Ahmed  
Department of Anatomy,  
Faculty of Medicine,  
National University,  
Khartoum, Sudan

e-mail: weg.anatomist@yahoo.com

##### Keywords:

BrainSuite  
Cerebral hemispheres  
Cortical area pial  
Cortical thickness  
Grey and white matter volumes and  
volume fractions  
Volume

#### ABSTRACT

The cerebrum is the largest part of the human brain, which responsible for language, memory, and cognition. Aim of the present study was to measure the volume and volume fraction of the cortex, white matter and cortical area pial of the hemispheres in normal young adult Sudanese, to investigate the effect of sex and age on these cortical structures. The study included 139 healthy young adult Sudanese subjects (80 males and 59 females). Participant's ages were ranging between 20-40 years. T1-weighted MR brain images with thickness 1mm were obtained. MR images of the subjects were analyzed using the automatic segmentation software (BrainSuite). Cortical structures of cerebral hemispheres including cortical thickness (CT) grey and white matter volume (GMV and WMV) and volume fraction of grey and white matters (GMVF and WMVF), in addition to the volume (V) and cortical area pial (CAP) were estimated using the output data of the process of the software. The GMV and WMV were larger in the males ( $338.12 \pm 38.95 \text{ cm}^3$  and  $189.43 \pm 26.67 \text{ cm}^3$ ) than that of the females ( $309.01 \pm 30.09 \text{ cm}^3$  and  $172.14 \pm 22.45 \text{ cm}^3$ ), respectively ( $P \leq 0.05$ ). Also, V and CAP were larger in the males ( $527.545 \pm 61.845 \text{ cm}^3$  and  $1305.995 \pm 126.07 \text{ cm}^3$ ) than that of the females ( $481.155 \pm 49.37 \text{ cm}^3$  and  $1205.21 \pm 97.79 \text{ cm}^3$ ), respectively ( $P \leq 0.05$ ). However, CT, GMVF, and WMVF were not different between males ( $3.82 \pm 0.18 \text{ mm}$ ,  $64.20 \pm 2.08\%$ , and  $35.80 \pm 2.08\%$ ) and females ( $3.80 \pm 0.14 \text{ mm}$ ,  $64.21 \pm 1.75\%$ , and  $35.79 \pm 1.75\%$ ) respectively, ( $P \geq 0.05$ ). The data related to the GMV, GMVF, WMVF, and CAP were decreasing by the age ( $P \leq 0.05$ ). However, there were no changes with age in CT, WMV, and V of the cerebral hemisphere ( $P > 0.05$ ). Sex and age are important factors to consider when evaluate the cortical structures of cerebral hemisphere. While the cortical volume, volume fraction of cortex and cortical thickness decreasing by the age, the others did not show difference. This data are also indicating that the mentioned parameters are the observable parameters for the quantitative studies.