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Preface

We would like to present, with great pleasure, the inaugural volume-8, Issue-5, May 2022, of a scholarly journal, *International Multispeciality Journal of Health*. This journal is part of the AD Publications series *in the field of Medical, Health and Pharmaceutical Research Development*, and is devoted to the gamut of Medical, Health and Pharmaceutical issues, from theoretical aspects to application-dependent studies and the validation of emerging technologies.

This journal was envisioned and founded to represent the growing needs of Medical, Health and Pharmaceutical as an emerging and increasingly vital field, now widely recognized as an integral part of scientific and technical statistics investigations. Its mission is to become a voice of the Medical, Health and Pharmaceutical community, addressing researchers and practitioners in below areas

Clinical Specialty and Super-specialty Medical Science:

It includes articles related to General Medicine, General Surgery, Gynecology & Obstetrics, Pediatrics, Anesthesia, Ophthalmology, Orthopedics, Otorhinolaryngology (ENT), Physical Medicine & Rehabilitation, Dermatology & Venereology, Psychiatry, Radio Diagnosis, Cardiology Medicine, Cardiothoracic Surgery, Neurology Medicine, Neurosurgery, Pediatric Surgery, Plastic Surgery, Gastroenterology, Gastrointestinal Surgery, Pulmonary Medicine, Immunology & Immunogenetics, Transfusion Medicine (Blood Bank), Hematology, Biomedical Engineering, Biophysics, Biostatistics, Biotechnology, Health Administration, Health Planning and Management, Hospital Management, Nephrology, Urology, Endocrinology, Reproductive Biology, Radiotherapy, Oncology and Geriatric Medicine.

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Basic Medical Science:

It includes articles related to Anatomy, Physiology and Biochemistry.

Spiritual Health Science:

It includes articles related to Yoga, Meditation, Pranayam and Chakra-healing.

Each article in this issue provides an example of a concrete industrial application or a case study of the presented methodology to amplify the impact of the contribution. We are very thankful to everybody within

that community who supported the idea of creating a new Research with *IMJ Health*. We are certain that this issue will be followed by many others, reporting new developments in the Medical, Health and Pharmaceutical Research Science field. This issue would not have been possible without the great support of the Reviewer, Editorial Board members and also with our Advisory Board Members, and we would like to express our sincere thanks to all of them. We would also like to express our gratitude to the editorial staff of AD Publications, who supported us at every stage of the project. It is our hope that this fine collection of articles will be a valuable resource for *IMJ Health* readers and will stimulate further research into the vibrant area of Medical, Health and Pharmaceutical Research.



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Research Area: Pediatric Surgery & Laparoscopy.

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First Report of Endoxifen Treatment for 1 Year: A Case Report of Bipolar Disorder

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Abstract— Bipolar disorder is a common chronic psychiatric condition, with treatment aimed at remission of symptoms and prevention of mood episodes. The pathophysiology of bipolar disorder I involves over expression of protein kinase C, which is thus considered a therapeutic target. Endoxifen, the metabolite of tamoxifen, has enhanced inhibitory action against protein kinase C, with a good safety profile. Endoxifen has shown promise in phase II and III clinical trials, with notable reduction in several symptom scale scores. This report describes the case of a woman with bipolar disorder diagnosed ten years prior, who was experiencing relapses. A change in medication to include endoxifen was effective. This is the first report of endoxifen use for duration of one year.

Keywords— Bipolar disorder, Endoxifen, Protein kinase.

I. INTRODUCTION

Bipolar disorders are one of the most common psychiatric conditions, and are the seventeenth leading cause of disability across the world. The estimated lifetime prevalence of bipolar disorders is 2.4%.⁽¹⁾ A significant concern is the high mortality rate, with a quarter of patients attempting suicide.⁽²⁾ The aim of treatment for acute manic episodes is symptom reduction and full remission, and that of acute depressive episodes is remission of symptoms and reduction of hypomanic and manic episodes. Maintenance treatment is aimed to prevent mood episodes.⁽³⁾ Despite the extensive research and wide range of therapeutics, bipolar disorder remains undertreated.⁽²⁾

Bipolar disorder I is the manic-depressive type, associated with overexpression of protein kinase C (PKC). Endoxifen is a metabolite of tamoxifen with enhanced inhibitory action against PKC, being four times more potent than tamoxifen. The antimanic activity has been demonstrated in phase II and III trials, with promise for use as monotherapy.⁽⁴⁾ In this report, we highlight the use of endoxifen for management of bipolar disorder, wherein it was used for the period of one year, making this the first report of its kind.

II. CASE REPORT

A 49-year-old woman with a history of hypothyroidism and thalassemia minor was diagnosed with bipolar disorder more than 10 years prior. Four years prior, she presented with a manic episode. She had a past history of multiple depressive episodes and couple of manic episodes. There was always a problem in achieving stability of mood which affected her functioning. The woman was a homemaker, and did not have a history of alcohol or substance abuse, and suicidal tendencies were not reported. The patient had received treatment with multiple drugs including olanzapine, desvenlafaxine, fluoxetine, risperidone, and aripiprazole. The patient had experienced side effects with olanzapine (weight gain, sedation), risperidone (irregular menstruation) and aripiprazole (agitation). The patient had been unable to function as a home maker causing a lot of distress to her. Her family had given up hope due to her repeated relapses and lack of stability on medications.

In April 2021, she presented with elated mood, over activity, social disinhibition and decreased sleep for a period of 6–8 weeks. She also complained of heaviness of head and burning sensation throughout her body which she found very distressing. Family reported her as being agitated and aggressive. Unlike before, she was not able to do her household chores. At this point, the Short Form 36 Health Survey (SF-36) score was 79 (maximum 100; lower score indicate more disability,

higher scores indicate less disability). The Young Mania Rating Scale (YMRS) score was 25, the Montgomery-Asberg Depression Rating Scale (MADRS) score was 11, the CGI BP score was 4, 6, 6 and the BPRS score was 72. Routine investigations including complete blood count, liver function tests, urea, creatinine, thyroid-stimulating hormone, and fasting plasma glucose were normal.

At the time of presentation, the patient was on treatment with olanzapine 10 mg once-daily, fluoxetine 20 mg per day and desvenlafaxine 100 mg per day. Both fluoxetine and desvenlafaxine were stopped immediately. The patient was started on endoxifen 8 mg once-daily. The dose of olanzapine was reduced to 5 mg once-daily and gradually stopped over a period of one month.

After three months, the patient showed an improvement in symptoms severity assessment scales (Table 1). The patient was able to undertake household chores. Specifically, with respect to question 4 of the SF-36, "During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?" and question 10, "During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?" the patient showed an improvement, with answers indicating the lack of interference of physical or emotional problems on daily activities and social activities. The details are presented in Table 2.

The treatment has continued for 1 year, and there have been no major relapses during this period. Minor mood fluctuations were managed by her family without the need for medical intervention. There were no side effects reported by the patient. She reported no changes in her menstrual cycle, and no sexual side effects.

TABLE 1
SYMPTOMS ASSESSMENT SCALE SCORES AT BASELINE VISIT AND FOLLOW-UP VISITS

Scale	Baseline	3 months	12 months
YMRS	25	5	5
MADRS	11	1	1
CGI BP	4, 6, 6	2, 2, 2	1, 2, 2
BPRS	72	32	32
SF-36	79	-	98

BPRS: Brief Psychiatric Rating Scale; CGI BP: Clinical Global Impressions – Bipolar Version; MADRS: Montgomery-Asberg Depression Rating Scale; YMRS: Young Mania Rating Scale; SF-36: Short Form 36 Health Survey

TABLE 2
SPECIFIC IMPROVEMENT IN RESPONSES TO QUESTION 4 AND QUESTION 10 OF THE SF-36

Question	SF-36 (Baseline)	SF-36 (12 months)
Q4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?		
a. Cut down the amount of time you spent on work or other activities	Yes	No
b. Accomplished less than you would like	Yes	No
c. Were limited in the kind of work or other activities	Yes	No
d. Had difficulty performing the work or other activities (for example, it took extra effort)	Yes	No
Q10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?	All of the time	None of the time

III. DISCUSSION

The case described highlights the utility of endoxifen in the management of bipolar disorder in a patient with repeated relapses, as well as depressive episodes and manic episodes. The treatment was safe and effective over the course of a year, which makes it the first report on long-term use of endoxifen for one year in a patient with bipolar disorder. The treatment had a benefit of good tolerability, which helped to stabilize the patients' condition.

Endoxifen is an inhibitor of PKC, and PKC is known to be involved in regulation of presynaptic and postsynaptic neurotransmission. Tamoxifen was studied for its utility in targeting PKC in patients with bipolar disorder. Though it possesses antimanic properties, the bioavailability and function vary considerably among populations, likely due to genetic polymorphism of CYP2D6. To circumvent this, endoxifen, a metabolite of tamoxifen which is independent of CYP2D6 metabolism, is promising for the management of bipolar disorder. Endoxifen inhibits PKC to a greater extent than tamoxifen (78% vs. 25%).⁽⁵⁾ Steady-state levels are achieved within 14 days, with dose-dependent pharmacokinetics. It has a mean terminal elimination half-life of 52.05 h (single dose of 4 mg).⁽⁶⁾

Since endoxifen is not metabolized in the liver, drug interactions with other antipsychotics is unlikely, as these are commonly metabolized by cytochrome P450 enzymes. This lends endoxifen an advantage over other drugs. Safety data indicates it is well-tolerated and safe compared with divalproex. Most adverse effects are mild or moderate, and usually resolve within the same day.^(4,6) Interestingly, the risk of weight gain is not present for endoxifen. This is of benefit as weight gain is a risk in patients with bipolar disorders, and antipsychotics usually add to this risk. Endoxifen also does not alter thyroid function, unlike valproic acid and divalproex. The expected benefit of this tolerability profile is improved adherence to therapy.⁽⁴⁾ This was reflected in the case presented, as the patient was adherent to treatment for one year, and did not report adverse effects. Furthermore, the patient did not report any menstrual irregularities, unlike with previous treatment with risperidone. This indicates that endoxifen 8 mg is a very low dose to limit estrogen-related activity, even when used over the long term (one year).

In a phase II trial, endoxifen at doses of 4 mg/day and 8 mg/day led to improvement of mania, as reported by the YMRS within 4 days of treatment initiation. A response rate of 64.29% was achieved after 21 days of treatment with 8 mg/day of endoxifen.⁽⁶⁾ These findings were confirmed in a phase III study among adult patients with bipolar disorder. Treatment with endoxifen 8 mg per day improved multiple measures of mania, including YMRS, MADRS and CGI-BP. Furthermore, remission was achieved faster with endoxifen (at 4 days) than with divalproex.⁽⁴⁾

In this case, the patient showed improvement in multiple measures of symptoms, with tremendous improvement noted at three months, which was maintained until one year of therapy. Specifically, the patient was able to undertake regular daily activities, and social activities, which was unlike when she presented for treatment. At the end of one year, the patient reported that her emotional and physical condition interfered with social activities "none of the time", and that her physical condition did not interfere with her regular daily activities. This was even felt by her family, as they noted her being unable to function as a home maker at the time of presentation. In fact, the emergent trends in psychiatry indicate not just symptom recovery, but also a return to normal functioning and a meaningful life is of importance.⁽⁷⁾ This outcome of treatment with endoxifen, leading to a restoration of daily functioning, is a key indicator of its efficiency, and also indicates that endoxifen is useful in preserving functioning and improving quality of life in patients with bipolar disorder.

IV. CONCLUSION

The management of bipolar disorder requires treating manic and depressive episodes, as well as maintenance therapy to ensure long-term therapy to mood stability. This case reports highlights the role of endoxifen, which is a novel PKC inhibitor with enhanced inhibitory effect, which is independent of metabolic enzymes, has few adverse effects, rapid action and improves manic symptoms in patients with bipolar disorder. The clinical data was supported by our observations of improved symptoms, with no major relapses noted for the period of one year. Improvement over YMRS, MADRS, BPRS and CGI BP were observed. The patient had good quality of life within a year of endoxifen treatment and started doing household chores unlike before, with improved SF36 score. Endoxifen has the potential to be an effective therapeutic for bipolar disorder, with potential for safe long-term use.

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-+Mineral Composition of Eggs of Various Chicken Strain

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Abstract— The study examined the effect of chicken strain on the mineral composition of eggs. Completely randomized design was used in the study. Eggs from each strain (Isa brown, Noiler, Lohmann, Leghorn) were crack opened into a 250ml beaker and homogenized with a stirrer. 5ml of the thoroughly mixed egg sample was digested using acidic digestion method. The digest was then cleaned up using silica jell. From the cleaned sample digest, 1ml was injected in Atomic Absorption Spectrometry (AAS) and the readings were recorded. Data obtained were analyzed using GenStat 20th Edition. Calcium values obtained for Isa brown, Noiler, Lohmann and Leghorn in the study were 0.00140, 0.00192, 0.00100 and 0.00390, respectively; mean values recorded for phosphorus were 6.79580, 7.31580, 5.87760 and 5.96380 correspondingly; mean values obtained for potassium were 0.00458, 0.00028, 0.00092 and 0.00330; values for iron were 0.05342, 0.04726, 0.03704 and 0.03168 and mean values recorded for sodium mean were 1.19078, 0.77600, 4.58860 and 0.92768, respectively. The study maintained that calcium and iron mineral contents of the chicken eggs are similar in the four strains studied, while eggs from Isa brown and Noiler had higher potassium and phosphorous contents, Lohmann had the highest sodium content when compared to the other strains.

Keywords— Mineral Composition, Chickent Strain, mineral composition of eggs, Isa brown, Noiler, Lohmann, Leghorn.

I. INTRODUCTION

Eggs have been a human food since ancient times. They are one of nature's nearly perfect protein foods and have other high quality nutrients. Eggs are readily digested and can provide a significant portion of the nutrients required daily for growth and maintenance of body tissues. They are utilized in many ways both in the food industry and the home .

Eggs nutrient is dependent on the diet, strain and health of the hen laying the egg (Dvořák *et al.*, 2010) The amount of the nutrient present in egg is also dependent on the rearing environment, hen strain and hen age (Dvořák *et al.*, 2010; Anderson, 2011; Anderson, 2013). Research showed that egg contain great amount of nutrient like zinc and its concentration present in egg decreased among layer hens in response to environmental stressors, type of housing system and their strain (Sahin *et al.*, 2009). It is believe that there are differences in the nutrient content of eggs reared in Cage-free and free-range rearing which are alternatives to caging systems for laying hens of different stain, and that eggs from free-range and cage-free hens have a higher nutritional quality than eggs from hens held in cage systems (Bejaei *et al.*, 2011). The present study was therefore carried out with the objective to Determine the mineral composition(Ca, K, Na, P, Fe) of eggs from four strains of layers namely; Isa brown, Leghorn, Lohmann and **Noiler** and to Compare the mineral compositions(Ca, K, Na, P, Fe) of the eggs from four strains of layers namely; Isa brown, Leghorn, Lohmann and **Noiler**.

II. MATERIALS AND METHODS

2.1 Location of Study.

The study was carried out at Maeve research laboratory Awka. It is located at temporary site of Nnamdi Azikiwe University Awka. Awka town is located in the South-Eastern part of Nigeria and in the eastern part of Anambra State. It is bounded by Latitudes 6°11'N and 6°17'N and longitude 7°02'E and 7°08'E.

2.2 Sample collection

Eggs used for this study were procured from Maeve Poultry Farms, Okpuno, Awka Anambra state. The eggs were collected from 24-week old layers, and transported to Maeve Academic Laboratory for mineral component analysis.

2.3 Experimental Design

The experiment was conducted using completely randomized design to test the effect of chicken strain on the mineral composition of eggs. There were four treatment groups comprised Isa brown (T₁), Noiler (T₂), Lohmann (T₃) Leghorn (T₄), and five replicates.

2.4 Equipment and Reagents Used

The equipment used include test tube, 250ml and 500ml beaker, magnetic shaker, stirrer, burette, pipettes, water bath, hot plate, sieve, Whatman No: 1 filter paper, Buchner funnel, spatula digital timer watch, 100ml column separating funnel, 50ml boil tube, 50ml measuring cylinder and AAS (atomic absorption spectrometer) machine. The reagents used includes Tetraoxosulphate (vi) acid, Hydrogen peroxide, Nitric acid (HNO₃) and distil water.

2.5 Sample Preparation for Analysis

The four strain egg samples gotten from organically reared hen were picked after three days interval, crack opened into a 250ml beaker and homogenized with a stirrer.

2.6 Experimental procedure

The method of AOAC Project number 984.27/ 2011.14 of 2013 was used. The mineral content analysis of the sample were divided into macro nutrient (Calcium, phosphorous, sodium and potassium) and micronutrient (iron).

2.6.1 Acid Digestion of sample (method of AOAC Project number 984.27/ 2011.14 of 2013)

Four grams (4g) each of the four strains of egg white and yolk were weighed into 50ml boiling tube. 10ml of tetraoxosulphate (vi) acid was added. The sample was heated on a hotplate for 30minutes. 2ml of hydrogen peroxide (H₂O₂) was added using a pipette. Digested samples were allowed to cool, then filtered through Whatman No.1 filter paper. The filtrates were collected in 50ml sample bottle and ready for clean-up before being injected into AAs (Atomic absorption spectrometer) machine.

2.6.2 Digested Sample Clean-up

In order to remove impurities, the digested samples were passed through silica gel packed in column separating funnel. The pure digested filtrates were collected in 50ml sterile sample bottle ready for injection into AAs machine.

2.6.3 Flame Test Using AAs Machine

One millilitre (1ml) of each of the samples were injected into AAs machine. The Macronutrient Minerals (Calcium, phosphorous, sodium and potassium) and micronutrient minerals (Iron) concentration of samples were read off the detector and recorded accordingly for each of the samples tested.

III. STATISTICAL ANALYSIS

The data collected were subjected to one way Analysis of variance (ANOVA) using GenStat 20th edition. The differences between treatment means were separated using Duncan's New Multiple Range Test at 5% level of significance.

IV. RESULTS AND DISCUSSION

The effect of strain (Isabrown, Noiler, Lohmann, and Leghorn) on the mineral composition of egg is shown in Table 1.

TABLE 1
THE EFFECT OF STRAIN (ISA BROWN, NOILER, LOHMANN, LEGHORN) ON THE MINERAL COMPOSITION OF EGGS

PARAMETERS	ISA BROWN	NOILER	LOHMANN	LEGHORN	SEM
CALCIUM	0.00140 ^b	0.00192 ^{ab}	0.00100 ^b	0.00390 ^a	0.00069
IRON	0.05342	0.04726	0.03704	0.03168	0.01483
PHOSPHORUS	6.79580 ^a	7.31580 ^a	5.87760 ^b	5.96380 ^b	0.25835
POTASSIUM	0.00458 ^a	0.00028 ^a	0.00092 ^b	0.00330 ^b	0.00060
SODIUM	1.19078 ^b	0.77600 ^b	4.58860 ^a	0.92768 ^b	0.14464

[#]MEANS bearing different superscripts along the same row are significantly different ($p < 0.05$)

SEM=STANDARD ERROR OF MEAN

Calcium in Noiler is similar ($p > 0.05$) to leghorn, lohmann and isa brown. Iron in the four strains were uniform across the board ($p > 0.05$). While isa brown and Noiler were higher in phosphorous ($p < 0.05$) compared to lohmann and leghorn . Potassium in isa brown and Noiler were similar and higher ($p < 0.05$) compared to lohmann and leghorn. Lohmann had the highest sodium ($p < 0.05$), while isa brown, noiler and leghorn were similar in sodium ($p > 0.05$).

The calcium levels in the four strains did not show any significant difference and this could be as a result of their Age, or time of oviposition. These results is in accordance with the report of Clunies *et al.* (1993) who reported constant plasma-Ca concentrations 1–6, 6–12, 12–18 or 18–24 h post oviposition. Similarly, Gunaratne and Boorman (1996) reported no significant trends in plasma Ca during the day. The serum Ca content was the same at both ages used in the course of study which is in contrast with Brackpool *et al.* (1996), Suchy *et al.* (2004), Gyenis *et al.* (2006), and Pavlik *et al.* (2009) who demonstrated a gradual decrease in plasma Ca with age.

Iron contents of the four strains of eggs were uniform across the board. This therefore, implies that there is no significant different seen in the iron mineral contents of the eggs from the four strains and this can be attributed to the type of feed they were fed. Schiavone & Barroeta (2011) reported that the content of some trace minerals in eggs such as selenium, iodine, and, at lower magnitudes, iron, zinc, fluoride, or magnesium are function their dietary supply for hens .

Phosphorous mineral as well was seen to be high in Isa brown egg and Noiler egg as compared with the Leghorn and Lawman. This difference could be as a result of time of lay or genetic makeup of the birds. Higher plasma P levels have been reported by Suchy *et al.* (2004) in laying hens at the end of the laying cycle but these results are in contrast to those of Eren *et al.* (2004) and Pavlik *et al.* (2009) where plasma P content was higher at the beginning of the laying cycle. Higher Phosphorous content in egg has been reported by Hester (1986) who also determined a higher P content in the eggs laid in the afternoon.

Concentration of potassium as well was noted to be the same in both Isa brown and Noiler egg followed by Leghorn and Lohmann brown. This finding agrees with the finding of Grobas *et al.* (2001) who reported that egg weight and egg mass from ISA-Brown were more than that from Dekalb Delta, and feed efficiency was also better for the ISA-Brown hens.

The finding also showed that sodium mineral is higher in Lohmann brown as compared to Isa brown, Leghorn and Noiler.

V. SUMMARY

A total of 20 eggs from the four breeds were used to determine the mineral composition in them using atomic absorption spectrometry and from the findings gotten from the result above showed that there is significant difference in the concentration of potassium, phosphorus and sodium while iron and calcium were not significant.

VI. CONCLUSION

Evidence from the study has proven that the mineral concentration of egg from different strain might be due to its diet composition and genetic makeup as well as management practices of the bird. It is also evident that for a particular mineral nutrient like sodium, more of Lohmann egg should be taken. For phosphorus and potassium, Isa brown and Noiler is better when compared to Lohmann and leghorn, while calcium and iron shows no significant difference amongst the four breeds used for the research. Based on the findings of the study, I would advice that egg consumers should consume more of Isa brown egg and Noiler as this contain better mineral constituents in terms of potassium and phosphorus. But more of

Lohmann brown egg if they need more of sodium. Further Research should be carried out on the meat different strain of birds to ascertain the mineral concentrate and constituents of different strains.

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