

Efficacy of Ketogenic Milk in The Intractable Epileptic Children

Thesis

*Submitted for partial fulfillment of the master degree of
Pediatrics*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة آية (٣٢)



Acknowledgement

*First and foremost, thanks to **Allah** for giving me the will and the patience to finish this work,*

*In a few grateful words, I would like to express my deepest gratitude and appreciation to **Prof. Dr. Omnia Fathy El-Rashiedy**, Professor of Pediatrics, Faculty of Medicine-Ain Shams University, for her great concern and generous help. Without her generous help, this work would not have been accomplished in its present picture.*

*I am sincerely grateful to **Prof. Dr. May Fouad Nassar** Professor of Pediatrics, Faculty of medicine, Ain Shams University, for his kind help and constructive suggestions to achieve this work,*

*I would also like to express my deep appreciation to **Dr. Marwa Hosni Abd El-Hamed**, Lecturer of Pediatric Prof. of Pathology, Faculty of Medicine-Ain Shams University, for her great kindness, constant assistance and guidance.*

*I would like to thank **all Members** of the department of Pediatric Neurology, Ain Shams Hospital for their support and cooperation.*

Lastly, there are no words to express my gratitude to my family who charged me with love and encouragement and to all patients and their families for their participation in this study.



Wafaa Samy Ahmed El Sayed

Contents

List of Abbreviations	i
List of Tables	ii
List of Figures	v
Introduction and Aim of the Work	١
Review of literature.....	٥
* Chapter ١: Epilepsy	٥
* Chapter ٢: Ketogenic Diet.....	٣٦
Patients and Methods.....	٥٣
Results	٦٠
Discussion.....	٩٢
Summary	١٠١
Conclusion.....	١٠٤
Recommendations	١٠٥
References	١٠٦
Arabic Summary	--

List of Abbreviations

AEDs	:	Antiepileptic drugs.
BMI	:	Body mass index.
HDL	:	High density lipoproteins.
KD	:	Ketogenic diet.
LDL	:	Low density lipoproteins

List of Tables

<i>Table</i>	<i>Title</i>	<i>Page</i>
١	Causes of seizures	٩
٢	١٩٨١ ILAE seizure classification	١١
٣	Classification of absence seizures	١٤
٤	The international league against epilepsy (ILAE) classification of epilepsy and epilepsy syndromes	١٧
٥	A proposed diagnostic scheme for people with epileptic seizures and with epilepsy	١٩
٦	Comparison between patients on liquid form of KD and polytherapy patients regarding clinical data upon enrollment	٦١
٧	Comparison between patients on liquid form of KD and polytherapy patients regarding anthropometric measurements upon enrollment	٦٢
٨	Comparison between patients on liquid form of KD and polytherapy patients regarding anthropometric measurements at ٣ months	٦٣
٩	Comparison between patients on liquid form of KD and polytherapy patients regarding anthropometric measurements at ٦ months	٦٤
١٠	Weight (by using Z score) in the studied groups throughout the study	٦٥
١١	Length (by using Z score) in the studied groups throughout the study	٦٦
١٢	Body mass index (by using Z score) in the studied groups throughout the study.	٦٨
١٣	Weight/Length (by using Z score) in the studied groups throughout the study	٦٩

List of Tables (Cont.)

Table	Title	Page
١٤	Head circumference (by using Z score) in the studied groups throughout the study.	٧١
١٥	Mid arm circumference (by using Z score) in the studied groups throughout the study	٧٢
١٦	Comparison between patients on liquid form of KD and polytherapy patients regarding lipid profile upon enrollment	٧٤
١٧	Comparison between patients on liquid form of KD and polytherapy patients regarding lipid profile at ٣ months	٧٤
١٨	Comparison between patients on liquid form of KD and polytherapy patients regarding lipid profile at ٦ months	٧٥
١٩	Cholesterol level among the studied groups	٧٦
٢٠	Comparison between Cholesterol Levels throughout the study period among the patients on liquid form of KD	٧٧
٢١	Triglyceride level among the studied groups	٧٨
٢٢	Comparison between Triglyceride levels throughout the study period among the patients on liquid form of KD	٧٩
٢٣	LDL level among the studied groups	٨٠
٢٤	Comparison between LDL levels throughout the study period among the patients on liquid form of KD	٨١
٢٥	HDL level among the studied groups	٨٢
٢٦	Comparison between HDL levels throughout the study period among the patients on liquid form of KD	٨٣

List of Tables (Cont.)

<i>Table</i>	<i>Title</i>	<i>Page</i>
٢٧	Comparison between patients on liquid form of KD and polytherapy patients regarding frequency and severity of seizures upon enrollment	٨٤
٢٨	Comparison between patients on liquid form of KD and polytherapy patients regarding frequency and severity of seizures at ٣ months	٨٤
٢٩	Comparison between patients on liquid form of KD and polytherapy patients regarding frequency and severity of seizures at ٦ months	٨٥
٣٠	Frequency of seizures/day and percentage of reduction at ٠, ٣ & ٦ months in patients on liquid form of KD	٨٦
٣١	Severity of seizures using Chalfont severity scale and percentage of reduction at ٠, ٣ & ٦ months in patients on liquid form of KD	٨٧
٣٢	Seizure severity score in the studied groups throughout the study	٨٨
٣٣	Comparison between severities of seizures using Chalfont severity scale throughout the study period among the patients on liquid form of KD	٨٩
٣٤	Frequency of seizure among the studied group throughout the study	٩٠
٣٥	Comparison between frequencies of seizures throughout the study period among the patients on liquid form of KD group	٩١

List of Figures

<i>Fig.</i>	<i>Title</i>	<i>Page</i>
١	Synthesis of the three ketone bodies during high rates of fatty acid oxidation)	٣٩
٢	Alterations in the metabolism of excitatory amino acids and γ -aminobutyric acid (GABA) during the high-fat, low-carbohydrate ketogenic diet).	٤٠
٣	Weight throughout the study	٦٦
٤	Length throughout the study	٦٧
٥	BMI throughout the study	٦٩
٦	Wt/Length throughout the study	٧٠
٧	Head circumference throughout the study	٧٢
٨	Mid arm circumference throughout the study	٧٣
٩	Cholesterol level throughout the study	٧٧
١٠	Triglycerides level throughout the study	٧٩
١١	LDL level throughout the study	٨١
١٢	HDL level throughout the study	٨٣
١٣	Chalfont Severity Scale throughout the study	٨٩
١٤	Frequency of seizures throughout the study	٩١

Introduction

Epilepsy is a neurological disorder, characterized by recurrent unprovoked seizures which have a high impact on the individual as well as on society as a whole. These seizures are transient signs and/or symptoms of abnormal, excessive or hypersynchronous neuronal activity in the brain (**Fisher et al., 2009**). This might affect, for example, the muscles, the senses, consciousness, or a combination. A seizure can be focal (confined to one part of the brain) or generalized (spread widely throughout the brain and leading to a loss of consciousness) (**Stafstorm et al., 2004**).

Epilepsy is one of the most common neurological disorders that affects at least 60 million people world wide (**De Boer et al., 2008**). Although the prognosis of the majority of patient is good; up to 10-30% do not respond to adequate antiepileptic drugs and are said to suffer from medically intractable epilepsy (**Gupta et al., 2009**).

Medically refractory epilepsy can be defined as inadequate seizure control despite appropriate medically therapy with at least 2 AEDs in maximally tolerated doses for 18 months- 2 years or adequate seizure control with unacceptable drug-related side effects (**Go et al., 2008**).

In some cases the cause is obvious, for example asphyxia brain damage, congenital infection or cerebral malformation. However, in many cases this is not so and there is always the question of whether there is an underlying disease (**Ashrafi et al., ۲۰۰۷**).

Patient suffer from intractable epilepsy are at increased risk for cognitive, behavioral and psychiatric disturbance (**Ekinici et al., ۲۰۰۹**).

In addition to the economic burden, epilepsy imposes a substantial burden on the patients and their surroundings. Patients with uncontrolled epilepsy depend heavily on informal care and on health care professionals (**De Kinderen et al., ۲۰۱۱**).

The ketogenic diet is a dietary therapy for epileptic children based on manipulation of metabolism principles and brain energetics. This regimen aims to produce a controlled ketonaemia through excessive dietary fat intake, little carbohydrates and adequate protein for growth (**Papandreou et al., ۲۰۰۶**).

The therapeutic potential of calorie restriction and the ketogenic diet have been repeatedly demonstrated in clinical settings and in various animal models of neurological disease.

The underlying mechanisms involve an improvement in mitochondrial function, a decrease in the expression of apoptotic factors and an increase in the activity of neurotrophic factors (**Maalouf et al., ٢٠٠٩**). Furthermore, the ketogenic diet (KD) side effects are generally transient, minor, and can be treated without having to discontinue the KD (**Freeman et al., ٢٠٠٧**).

While the ketogenic diet (KD) now is recognized as an accepted treatment for children with intractable epilepsy, its use in all age groups is generally restricted to the treatment of last resort as its safety and efficacy remain controversial (**Rubenstein et al., ٢٠٠٨**).

Aim of the Work

This study aims to evaluate the clinical efficacy of ketogenic milk use in the intractable epileptic children as regard: reduction in seizures frequency, maintaining appropriate growth and lipid profile.