

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

# جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
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# بعض الوثائق الأصلية تالفة

بالرسالة صفحات  
لم ترد بالأصل



Faculty of Home Economics  
Dept. of Nutrition and Food Science

## Biological & Technological Studies on Some Functional Baby Foods Formulae

Thesis

Submitted in Partial Fulfillment of the Requirements for the  
Degree Of Doctor of Philosophy

In

"Nutrition and Food Science"

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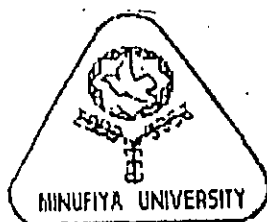
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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

صَدَقَ اللَّهُ الْعَظِيمُ

( سورة البقرة " الآية ٣٢ " )

IN THE NAME OF ALLAH,  
THE BENEFICENT,  
THE MERCIFUL

*They Said :*

" Be glorified we have no knowledge except that  
which you have taught us indeed you are the knower, the  
wise."

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## Abbreviation

A.N.F	Anti Nutritional Factors
B.D.	Bulk Density
B.V.	Biological Value
E.S.	Egyptian Standardizations
F A O	Food and Agriculture Organization
F.E.R	Food Efficiency Ratio
K. CAL.	Kelo – Calory
M.CH.C.	Mean Corpuscular Hemoglobin Concentration
N.P.R.	Net Protein Ratio
P.E.R.	Protein Efficiency Ratio
R.D.A	Recommended Daily Allowance
T.I.U.	Trypsin Inhibitor Unit
W.A.I	Water Absorption Index
W.H.O.	World Health Organization
W.R.P.	Water Retention Percent
W.S.I.	Water Solubility Index

# 1- Introduction

Millions of children in un-developing countries of the world are suffering from malnutrition. Malnutrition is more common during weaning period.

Weaning period is identified as the rapidly growing period between infancy and childhood. The common causes of malnutrition are the result of poverty and lack of suitable nutritional knowledge.

Weaning foods must be bridge of the gap between breast-feeding and the family diet. Infant age six to twelve months are the major group of weaning food consumers. In rural area, weaning does not start before the second six months of life and may extend to more than two years.

Malnutrition is the single most important associated responsible for the high mortality rate.

In Egypt malnutrition was noticed during infancy and childhood as a result of insufficient supplies of required good healthy nutrients to meet the relatively rapid growth of infants at this age.

There is a clear shortage in suitable weaning foods processed in Egypt. Most of manufactured locally baby foods consists of mixed cereals which nutritionally do not meet the needed requirements of essential nutrients for infants in this stage of rapid growth. The important of infant foods increased year by year in Egypt, therefore, preparation of infant formulae of high nutritional value (nutritionally

balanced) from locally available raw materials to assist breast feeding with suitable preparation and processing to inhibit or minimize anti-nutritional factors, and improve the biological value by using germinated seeds, in addition using some medicinal plants.

**The aims of the present investigation are:**

- 1- Using 15 raw materials food items from preparing and processing baby food blends as follows.
  - Legumes: (Faba beans, soy beans, lentil, and fenugreek) seeds.
  - Cereals: Barley, and rice.
  - Vegetables: potatoes, and yellow carrots.
  - Peanut seeds.
  - Skim milk powder.
  - Medicinal plants: peppermint leaves, anise, fennel, and caraway seeds.
  - Sugar: sucrose.
- 2- Using different pre-treatments to remove the Anti-Nutritional Factors (Soaking, germinating cooking and roasting).
- 3- Determination the biological values of the seven investigated blends (F.E.R., PER., NPR., D.C., relative liver, heart, kidneys weight, to body weight and blood hemoglobin concentrate.