

**NUTRITIONAL STUDIES ON JOJOBA  
(*Simmondsia chinensis*) SEED MEAL AS A PROTEIN  
SOURCE IN DIETS OF JAPANESE QUAIL**

By

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**Submitted in Partial Fulfillment of the  
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## List of Abbreviations

ABBREVIATION	MEANS
A.A.A.A.	Availability of apparent amino acids
A.O.A.C.	Association official analytical chemist
Alb	Albumin
ALT	Alanine amino transaminase
AME	Apparent metabolizable energy
AMEn	Apparent metabolizable energy after nitrogen correction
AST	Aspartate amino transaminase
b.wt	Body weight
BWG	Body weight gain
C.A.A.I.	Critical amino acids index
CF	Crude fiber
Chol.	Cholesterol
CP	Crude protein
CS	Chemical score
CSM	Cottonseed meal
DE	Digestible energy
DM	Dry matter
E.A.A.I.	Essential amino acids index
EE	Ether extract
FC	Feed consumption
FCR	Feed conversion ratio
FI	Feed intake
GE	Gross energy
Glo	Globulin
GOT	Glutamic oxaloacetic transaminase
GPT	Glutamic pyruvic transaminase
J	Jojoba
JM	Jojoba meal
kg.	Kilogram
LD <sub>50</sub>	Lethal dose. The dose, which experimentally kills 50% of experimental animals (mg/kg b.wt)
NFE	Nitrogen free extract
NRC	National research council
NZW	New Zealand White
OM	Organic matter
P	Price
p.p.m	Part per million
S.	Simmondsin
S.2.fer.	Simmondsin 2-ferulate
SBM	Soybean meal
TAAA	True amino acid availability
TGW	Total gain weight
TJM	Treated jojoba meal
TL	Total lipid
TME	metabolizable energy
TMEn	True metabolizable energy after nitrogen correction
TP	Total protein
Trgl.	Triglyceride
UA	Uric acid True

A decorative graphic featuring a pink and black floral and scrollwork design. It includes a large, intricate flower with a black center and pink petals, surrounded by swirling lines and smaller floral motifs. The design is positioned around the text 'Introduction'.

# *Introduction*

## INTRODUCTION

Egypt is facing problems in poultry production resulting deficiency of available protein sources used in production of poultry and animal feeds which enforced the Egyptian Government to import protein source of high prices which increased the animal feed costs and consequently the costs of animal and poultry products. Therefore, animal nutritionists in Egypt and in many developing countries are searching for other non traditional protein sources available in their countries to reduce the feed costs.

The jojoba plant (*Summondsia chinensis*) from the family of Buxaceae is dioecious evergreen shrub native to Sonoran Desert of the southwestern U.S.A and northern Mexico. The plant is now cultivated in many arid and semiarid places around the world due to its high seed yield in new reclaimed soils, limited water requirements, low nutrient requirements and longevity (**Leon *et al.* 2004 and Van Boven *et al.* 2000**). In Egypt, where the irrigation water is limited and very big areas are uncultivated desert, the jojoba prove to be suitable plant for desert areas. Recently, the cultivation areas of jojoba in Egypt are concentrated in Ismailiya region, New Valley, Sharkiya and Assuit Governorate to help land reclamation and improve more land for agriculture.