CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviation	Synonyms
Alb	Albumin
ANOVA	Analysis of Variance
a.p	Ante partum
APPs	Acute phase proteins
APR	Acute Phase Response
d	Days
d p.p	Days post partum
DIM	Days in Milk
DMI	Dry Matter Intake
DMRT	Duncan's Multiple Range Test
EFSA	European Food Safety Authority
Fb	Fibrinogen
GOVS	General Organization of Veterinary Service
Hp	Haptoglobin
H/ LLAI	Liver Activity Index High/ Low
LLFI H/	Liver Functionality Index High/ Low
mins	Minutes
NEB	Negative Energy Balance
NEFA	Non-Esterified Fatty Acid
NFC	Non Fiber Carbohydrates
NRC	National Research Council
O.D	Optical Density
PH	Potential of Hydrogen
RBP	Retinol Binding Protein
ROS	Reactive Oxygen Species
rpm	Round Per Minute
SA	Serum Albumin
SAA	Serum Amyloid A
SAS	Statistical Analysis System
TAG	Triacylglyceride
TB	Total Bilirubin
TC	Total cholesterol
TP	Transition Period
VFA	Volatile Fatty Acids
VLDL	Very Low Density Lipoproteins

Summary

The objectives of this study were to record the changes in some acute phase proteins (APPs) either positive or negative during transition period, calculate the liver activity index (LAI) and the liver functionality index (LFI) in buffaloes during post- partum period and to demonstrate the correlation between different APPs in the transition period. To achieve these objectives, 29 pregnant buffaloes at 2^{nd} -3^{rd} milk season, from 2 – 4 years old were included. The study was carried out in Assuit *Governorate*, *Ard El -Kheir* farm. Animals were followed up 6 weeks before calving (only the last 3 weeks relative to calving were used in this study) and 4 weeks after calving.

Whole blood samples were collected from these buffaloes for determination of fibrinogen (g / l), blood plasma samples were collected for determination of vit. A (μg/dl) and blood serum samples were collected for determination of serum albumin (g/l), serum total cholesterol (mmol/l), serum total bilirubin (μmol/l) and serum haptoglobin (μg/ml).

Blood samples were collected as the following: (-21d: -15d), (-14d: -8d), (-7d: -1d), calving day, 3 d P.P, 7 d P.P, 14 d P.P and 28 d P.P.

According to the values of serum albumin (g/l), serum total cholesterol (mmol/L) and plasma vit. A (μg/dl) at days 7, 14 and 28 P.P, liver activity index was calculated and the animals were classified into high liver activity index (positive output of calculation) & low liver activity index (negative output of calculation).

According to the values of serum albumin (g/l), serum total cholesterol (mmol/l) & serum total bilirubin (μmol/l) at days 3 and 28 P.P, the liver functionality index was calculated and the animals were classified into high liver functionality index (positive output of calculation) and low liver functionality index (negative output of calculation).

I-Clinical examination:

The animals in this study revealed that body temperature, respiratory and pulse rates and ruminal movement were within normal reference range. Also, udder and mucous membranes were apparently healthy. No abnormal clinical signs were recorded during the study period.

Biochemical Analyses:-

1- Mean values of plasma fibrinogen showed:

♦ Highly significant difference ($p<0.01$) in plasma fibrinogen during the period of the study and a significant difference ($p<0.05$) between these periods and each other. A significant increase ($p<0.05$) at calving day compared with pre calving periods. Also, at day 3 P.P compared with pre calving periods, calving day, and days 14 & 28 P.P.

2- Mean values of serum haptoglobin showed:

♦ Non significant difference in serum haptoglobin during the period of the study. Maximum increase occurred at (-7d:-1d) then decreased and returned to increase at day 7 P.P followed by another decrease.

3- Mean values of serum total bilirubin showed:

* Highly significant ($p<0.01$) increase in serum total bilirubin during the period of the study and a significant ($p<0.05$) increase between these periods and each other. A significant ($p<0.05$) increase at calving day compared with (-21d:-15d) and (-14d:-8d). Also, at post calving periods

compared with pre calving periods. Non significant increase at post calving periods compared with calving day.

* Highly significant ($p<0.01$) difference in serum total bilirubin between the (HLFI) and the (LLFI) groups during period of the study. A significant increase ($p<0.05$) at day 3 P.P in the (LLFI) group compared with the (HLFI) one. A significant increase ($p<0.05$) in the (HLFI) during day 14 and day 28 P.P compared with the (LLFI) at the same periods.

4- Mean values of serum albumin showed:

- Highly significant ($p<0.01$) difference in serum albumin during the period of the study and a significant ($p<0.05$) difference between these periods and each other. A significant ($p<0.05$) increase at (-7d:-1d) compared with (-21d:-15d), (-14d:-8d) and post calving periods. Also, at calving day compared with days 7, 14 and 28 P.P. Non significant decrease at calving day compared with (-7d:-1d).
- Non significant decrease in serum albumin in the (LLAI) group compared with the (HLAI) one at the same period except at calving day there was a significant ($p<0.05$) decrease in (LLAI) group compared with the (HLAI) one.
- Non significant decrease in serum albumin in the (LLFI) group compared with the (HLFI) one at the same period.

5- Mean values of serum total cholesterol showed:

- Highly significant ($p<0.01$) difference in serum total cholesterol during the period of the study and a significant ($p<0.05$) difference between these periods and each other. A significant ($p<0.05$) decrease at (-7d:-1d) compared with (-21d:-15d) and (-14d:-8d). Maximal and significant ($p<0.05$) decrease at calving day compared with pre and post calving periods. A significant ($p<0.05$) increase at post calving periods reached maximum at day 28 P.P compared with calving day.

- Non significant decrease in serum total cholesterol in the (LLAI) group and the (HLAI) one at the same period except at day 28 P.P, there was a significant ($p<0.05$) decrease in (LLAI) group compared with the (HLAI) one .
- Non significant decrease in serum total cholesterol in the (LLFI) group compared with the (HLFI) one during the same period.

6- Mean values of serum Vit. A showed:

- Highly significant ($p<0.01$) difference in serum Vit. A during the period of the study and a significant ($p<0.05$) difference between these periods and each other. A significant decrease ($p<0.05$) at calving day compared with (-7d:-1d), (-21d:-15d) and (-14d:-8d). A significant decrease ($p<0.05$) continued and reached maximum at day 7 P.P compared with the previous periods, followed by significant ($p<0.05$) increase reached maximum at day 28 P.P.
- Non significant decrease in the (LLAI) group compared with the (HLAI) one except at day 14 P.P, there was a significant decrease ($p<0.05$) in the (LLAI) group compared with the (HLAI) one.

7- **Mean values of Liver functionality index (LFI) and Liver activity index (LAI) showed**: High significant ($p<0.01$) increase in the high group compared with the low one.

8- Correlation

The obtained results showed that haptoglobin was positively correlated with albumin, total bilirubin and fibrinogen**.** Total cholesterol and vit. A were negatively correlated with albumin, total bilirubin, fibrinogen and haptoglobin.