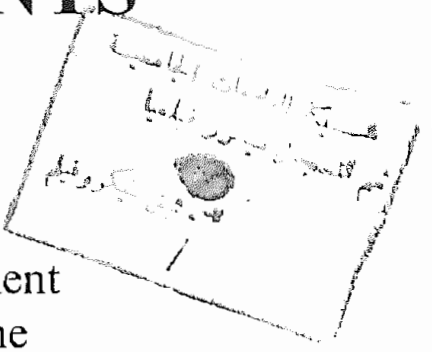
SERUM VITAMIN A IN DIABETIC PATIENTS



THESIS

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for Master of Inernal Medicine

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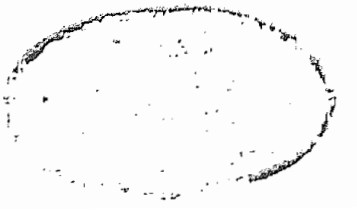

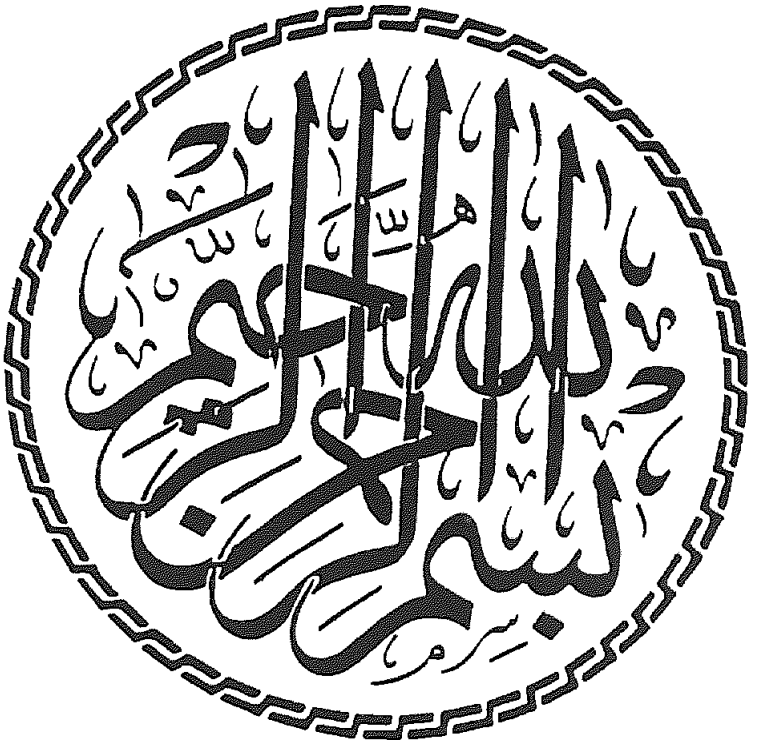
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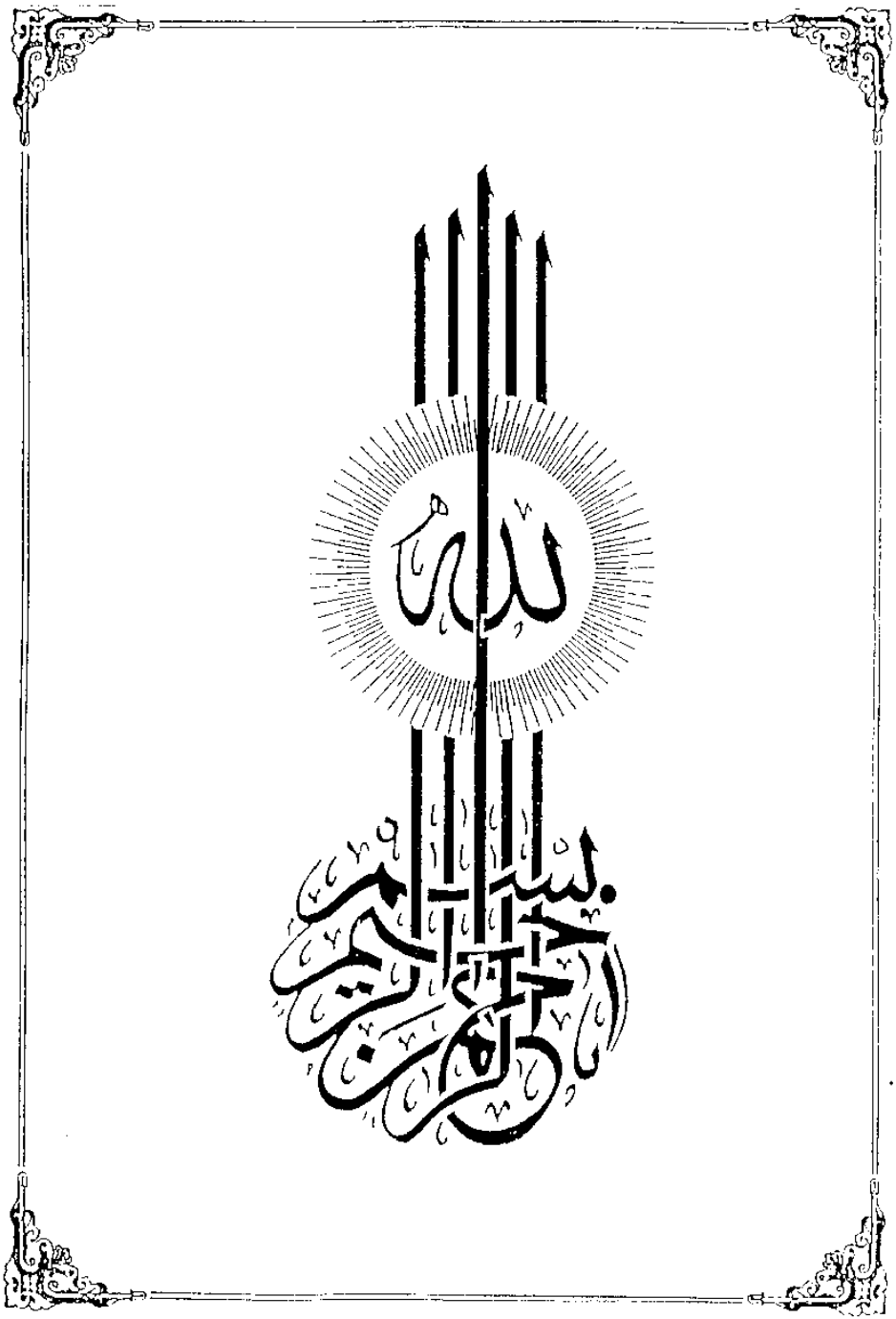

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INTRODUTION & AIM OF THE WORK

" INTRODUCTION AND AIM OF THE WORK"

A recent clinical investigation(1) revealed that insulin-independent diabetic patients had increased plasma retinyl ester and lower retinol levels than did normal control subjects.

Lowered plasma levels of vit, A in diabetic children were reported by Mosenthal and Loughlin in (2) 1944. A study using an animal model for diabetes mellitus demonstrated that administration of both regular and globin-type insulins lowered the hepatic storage of vit. A (3).

Becuase signs of carotenemia and elevated serum carotene levels are common in patients with diabetes mellitus, it was suggested that, the diabetic state interferes with conversion of carotene to vit. A. 4 - 6.

Despite the observed association between vit. A. and diabetes the nutritional status of this vitamin together with retinol-binding protein (RBP), (the specific transport protein for vit. A.), have not been studied in patients with insulin-dependent diabetes mellitus (IDDM).

"The aim of this work is to study vit. A in both types of diabetes mellitus, "before and after glycemic control.

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1 - Wako Y, Suzuki K, Goto Y, Kimura S. Vitamin A transport in plasma of diabetic patients. Tohoku J Exp Med 1986; 149: 133 -43.

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3 - Bowles WH, Influence of insulin on liver vitamin A in rats. Diabetes 1967; 16:704-7.

4 - Gouterman IH, Sibrack LA. Cutaneous manifestations of diabetes. Cutis 1980; 25: 45 -54.

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REVIEW OF LITERTURE

Diabetes

* The definition of diabetes :-

Diabetes mellitus is a disease syndrome best characterised as a state of chronic hyperglycemia of various aetiologies.

It may present with acute symptoms that include thirst, polyuria and unexplained weight loss (Classical onset) and these can progress to life threatening ketoacidosis or hypersosmolar coma.

Subacute symptoms include the above tegther with pruritus vulvae, balanitis, other skin infections, unusal fatigue or visual impairment.

Chronic hyperglycemia may be asymptomatic, but is generally recognised as a predisposing risk for microvascular complications, retinopathy and nephropathy.

The clinical suspicion of diabetes is strongly enhanced by finding glycosuria with or without ketonuria, but biochemical confirmation of the diagnosis is required by accurate measurement of blood glucose using a specific enzymatic glucose assay.

Revised criteria for diagnosis of diabetes mellitus and other categories of glucose intolerance have been developed recently [**National Diabetes Data Group; 1979**] and these have been endorsed [**World Health Organization "WHO" ; 1980**] and supported by other national groups [**Welborn; 1984**]

* <u>Dignosis of diabetes mellitus</u> :-

1 - <u>Single blood glucose measurement</u> :-

With acute symptoms, gross and unequivocal elevation of blood glucose confirms the diagnosis, namely fasting venous plasma glucose level of 7.8 mmol/dL or more **(140 mg/dl) or post absorptive venous plasma plucose levels of 11.1 mmol/dL or more (200 mg/dl or more).**

2 - <u>Two blood glucse measurements</u> :-

In the abscence of symptoms of diabetes at least two abnormal values; fasting or post-absorptive as defined above, are required to establish diagnosis.

3 - Oral glucose tolerance test (OGTT) :-

This should be reserved for specific indications, since in florid diabetes, the test is unnecessary, and can sometimes precipitate hyperosmolar coma. The indications are :-

* Equivocal fasting or vandom blood glucose values.
* Suspicion of gestational diabetes.
* Clinical or epidemiological research.
* To exclude diabetes mellitus.

The test must be conducted in the morning after an unrestricted diet (more than 1509m carbohydrate for 3 days) and a 10 - 16 hour over night fast. The OGTT is contra indicated if there is gross elevation of post-absorptive blood glucose levels.

At zero time afasting blood sample should be obtained and 300 ml solution of 75 gm glucose administered orally over 5 minates. It is recommended that blood samples are collected at 30 minute intervals for 3 hours.

For venous plasma glucose measured by a specific enzymatic assay both the two hour sample and one other sample should meet following criteria. (≥ 11.1 mmol/L i.e. > 200 mg/dl). **[Welborn; 1984]**

* **Biochemical definition of impaired glucose tolerance** (I.G.T.)

This was called previously chemical diabetes as it is an OGTT diagnosis based on a fasting plasma glucose level of ≤ 7.8 mmol/L, plus a two hour plasma glucose level of between 7.8 and 11.1 mmol/L and an intervening plasma glucose level of 11.1 mmol/

Individuals with IGT are not diabetic but have an increased risk of progression to diabetes estimated to be at the rate of 1% to 5% per year.

Increased susceptibilitiy to atherosclerosic disease is implied, but this is due to association with known risk factors for arterial disease including hypertension, hyperlipidemia, adiposity and aging.