additional risk for reduced sleep quality and quantity, and the presence of hyperglycemia, as a complicating factor, has being increasingly frequent. Different measures of sleep evaluation, both objectively and subjectively, can provide additional information about the influence of sleep in metabolic control in Gestational Diabetes Mellitus (GDM). **Objective:** To investigate the influence of sleep quality and objective sleep measures on glycated hemoglobin (HBA1C) in patients with GDM. **Methodology:** This is a cross-sectional study examining patients with GDM from 2nd to 3rd trimester of pregnancy. Clinical data and behavior questionnaires were collected by a face-to-face interview. Self-Rated Sleep Quality was evaluated by Pittsburgh Sleep Quality Index- (PSQI). In order to improve the accuracy of the information, a 14-day sleep log was obtained, and objective sleep measurements were registered by actigraphic record (5 to 7 days). **Results:** Overall, GDM patients (N=311), aged from 20 to 46 y (33.1±5.6) were evaluated. Sleep duration ≤6 hours/night was found in 43.4%, and 63.9% reported poor sleep quality (PSQI>5). Sleep duration measured by actigraphy was correlated with sleep duration registered by sleep log (r=.45, p=.04), and with PSQI (r=-.33, p=.002). Sleep quality and sleep duration registered by either actigraphy or sleep log were not correlated with Hba1c. Amongst all, Hba1c varied from 4.3 to 7.0 mg/dL (5.9 ±.53). Sleep fragmentation, measured by the length of time patient spends awake after sleep onset (WASO) was correlated withHba1c level in patients with GDM (r=.41, p=0.04). **Conclusion:** Sleep duration obtained from the sleep log was a reliable measure correlating with objective sleep parameters registered by actigraphy and with sleep quality. In GDM patients, increased wake time after sleep onset was correlated with higher Hba1c.

Diabetes Mellitus and Glucose Metabolism

DIABETES IN WOMEN AND DURING PREGNANCY

The Performance of Glycated Hemoglobin Versus Oral Glucose Tolerance Test in the Diagnosis of Glycemic Disorders Among Women With Polycystic Ovary Syndrome in Southern Iraq

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Background: Obese women with PCOS are at high risk for developing diabetes mellitus (T2DM). A baseline oral glucose tolerance test (2hrs-OGTT) annually is an important to screen for dysglycemia in women with PCOS particularly those with at least one risk factor. Due to its advantages by fasting is not required and less day-to-day variability during periods of stress or illness, glycated hemoglobin (HbA1c) might consider a convenient screening tool. This study aimed to evaluate the performance of HbA1c versus 2hrs-OGTT in the diagnosis of glycemic disorders in women with PCOS and to evaluate the correlation between glycemic disorders, insulin resistance (IR), and anthropometric measures. **Patients and methods**: One hundred and thirty women of a mean age 26.3 ± 6.85 year were diagnosed with PCOS according to Rotterdam 2003 criteria in Basrah, Southern Iraq. All women were examined for weight, BMI and waist circumference then they were sent for fasting plasma glucose (FPG), 2hrs-OGTT, HbA1c, and fasting insulin to assess IR. **Results:** By 2hrs-OGTT, impaired glucose tolerance and T2DM were diagnosed in 16.1% and 2.4% of women with PCOS respectively and 6.7% of lean women were prediabetes. HbA1c was underestimate the diagnosis of T2DM (0.8%) and overestimate prediabetes (20%) (p=0.011) and at HbA1c= 5.55%, the specificity was (74.3%) and sensitivity (56.5%) to discriminate normal from abnormal glucose status in women with PCOS (AUC: 0.645; 95% C.I.: 0.503–0.77; $p = 0.03$). One hundred women (76.9%) were either overweight or obese and most of them had IR (78%). **Conclusion:** screening of glycemic disorders is a crucial for PCOS by using 2hrs-OGTT regardless risk factor and HbA1c seems to be unsatisfactory screening tool to predict glycemic disorders in women with PCOS.

Diabetes Mellitus and Glucose Metabolism

DYSREGULATED METABOLIC RESPONSE

Characterization of Viral Insulin-Like Peptides Reveals Unique White Adipose Tissue Specific Characteristics

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The members of the insulin superfamily are well conserved across the evolution tree. We recently showed that four viruses in the *Iridoviridae* family possess genes that share high similarity with human insulin and IGF-1. By chemically synthesizing single chain (sc, IGF-1 like) forms of these viral insulin/IGF-1 like peptides (VILPs), we previously showed that sc VILPs have insulin/IGF properties in vitro and in vivo. However, characteristics of double chain (dc, insulin-like) VILPs remain unknown. In this study, we characterized dc forms of VILPs for Grouper iridovirus (GIV), Singapore grouper iridovirus (SGIV) and Lymphocystis disease virus-1 (LCDV-1). We showed that GIV and SGIV dcVILPs bind to both isoforms of human insulin receptor (IR-A, IR-B) and they bind to IGF-1R with a higher affinity than human insulin. These dcVILPs stimulate receptor phosphorylation and post-receptor signaling in vitro and in vivo. LCDV-1 dcVILP stimulated a weak response in in vitro signaling experiments, although we could not determine binding competition. Both GIV and SGIV dcVILPs stimulated glucose uptake in mice. In vivo infusion experiments in awake mice revealed that while insulin (2.5

mU/kg/min) and GIV dcVILP (125 mU/kg/min) stimulate a comparable glucose uptake in heart, skeletal muscle and brown adipose tissue, GIV dcVILP stimulates ~2 fold higher glucose uptake in white adipose tissue (WAT) compared to insulin. This is due to increased Akt phosphorylation and glucose transporter type 4 (GLUT4) expression compared to insulin specifically in WAT. Taken together, these results show that dc GIV and SGIV dcVILPs are active members of the insulin superfamily with unique characteristics. This observation evokes questions about their potential roles in human disease including diabetes and cancer. Elucidating the mechanism of tissue specificity for GIV dcVILP will help us to better understand insulin action and design new analogues that specifically target the tissues.

Diabetes Mellitus and Glucose Metabolism

DYSREGULATED METABOLIC RESPONSE

Effects of Exercise, Metformin, Pioglitazone and Exenatide Treatment on Inflammation Induced Insulin Resistance and Ubiquitin Proteasome System in Diabetes and Obesity.

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Purpose: The aim of this study is; To examine the destruction of insulin receptor substrate-1 (IRS-1) molecule, which is one of the mechanisms that cause insulin resistance in diabetes and obesity, and its effect to reduce this destruction. For this purpose, the effects of exercise, metformin, exenatide and pioglitazone treatments on IRS-1 ubiquitination in pancreas, muscle and adipose tissue were investigated in an obese and diabetic animal model.
Method: Obese rat model was used in this study. This model is characterised by obesity, diabetes and insulin resistance. This study investigated the molecular mechanisms of IRS-1 breakdown in diabetes. IRS1, SOCS1, SOC3 expressions were evaluated in the liver, muscle and adipose tissue of this model. At the same time, immunohistochemical analyses were performed in terms of IRS1, SOCS1 and SOCS3 in the same tissues.
Results: Gene expression and Immunohistochemical analysis results were evaluated, the increase in IRS1 was noticeable in rats treated with exenatide, especially in the liver tissue despite the greater decrease in SOCS1 (P> 0.05). It was determined that other drugs in this study and used in the treatment of diabetes may also affect this mechanism to different degrees.
Conclusion: Our findings showed that some drugs used in the treatment of diabetes may alter the SOCS effect and / or proteasomal degradation of the IRS-1 protein. This effect was particularly pronounced in liver tissue. However, more comprehensive studies are required to show the contribution of ubiquitination in the destruction of IRS-1 and which drugs are effective on this mechanism.
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Diabetes Mellitus and Glucose Metabolism

DYSREGULATED METABOLIC RESPONSE

Effects of Extracts of** Plathymenia Reticulata Benth **and** Azadirachta Indica (Neem) **in Glycated Hemoglobin in Diabetic Rats

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Introduction: The *Plathymenia reticulata benth* is a herbal medicine that has properties of pancreatic islet hyperplasia and glycemic control in diabetic rats. *Neem (Azadirachta indica A. Juss, Meliaceae)* is a tree native to India that has several medicinal effects. Goal: To verify the effect of glycated hemoglobin levels in rats with type 1 and non-diabetic diabetes mellitus, in treatment with *Plathymenia Reticulata Benth, Neem* and the association between them. compared to insulin. Methodology: Diabetes was induced by intraperitoneal streptozotocin (65mg/kg) administration after a 24-hour fast. The diagnosis was made using a blood glucose value above 200mg/dl. The study was conducted in 60 male adult Wistar rats, weighing between 180 and 220 grams, divided into 9 groups, between diabetics (DM) and non-diabetic controls (NdM), and treated with *Neem* (300 mg/kg), cold aqueous extract of *Plathymenia* (100 mg/kg), water (negative control) and insulin (3 IU/day) - positive control; and association between plants. The treatment was performed by orogastric gavage for a period of 28 consecutive days, and weekly weight and daily feed intake were performed. Data were analyzed using ANOVA and Tukey-Kramer's pos-hoc test, with a significance level of 5% using the SPSS25.0 software. The results are expressed on average ± EPM.
Results: There was a significant difference in glycated hemoglobin levels in rats submitted to insulin treatment (6.18 ± 0.36) compared to those submitted to treatment with *Neem* (10.12 ± 1.29, p=0.047), *Plathymenia+Neem* (12.09 ± 0.38, p=0.006) and water (10.86 ± 1.26, p=0.015). However, no significant difference was observed between the reduction in glycated hemoglobin levels in the groups submitted to insulin treatment compared to the group treated with *Plathymenia* (7.30 ± 0.68, p=0.911). **Conclusion:** The results allow us to evaluate a non-inferiority condition in relation to the use of the *Plathymenia* when compared to treatment with insulin therapy, positive control in the treatment of type 1 diabetes mellitus. The *Plathymenia*may present as a herbal option in the treatment of the disease and prevention of