



UNIVERSIDAD JUÁREZ  
AUTÓNOMA DE TABASCO

“ESTUDIO EN LA DUDA. ACCIÓN EN LA FE”

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# Artículos Científicos

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División Académica de Ciencias  
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**Celecoxib reduces hyperalgesia and tactile allodynia in diabetic rats**

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**ABSTRACT**

In the present study we determined the antihyperalgesic and antiallodynic effect of celecoxib in diabetic rats as well as the possible participation of opioid receptors in the mechanism of action of celecoxib in these rats. Methods: Experimental diabetes was induced by streptozotocin. Formalin (0.5%) was used to produce hyperalgesia in non-diabetic and diabetic rats. von Frey filaments were used to determine the 50% withdrawal threshold in diabetic rats. Results: Oral administration of celecoxib (0.3-30 mg/kg) reduced formalin-induced nociceptive behavior during phase 2. Systemic pre-treatment (-10 min) with naltrexone (3 mg/kg) prevented celecoxib-induced antihyperalgesia in formalin-treated diabetic rats. Furthermore, naltrexone as well as the  $\delta$  and  $\kappa$  opioid receptor antagonists naltrindole (3 mg/kg) and 5'-guanidino naltrindole (1 mg/kg), respectively, fully prevented celecoxib-induced antihyperalgesia (10 mg/kg) in formalin-treated non-diabetic and diabetic rats. Furthermore, celecoxib (0.3-30 mg/kg) produced an antiallodynic effect in diabetic rats. Pre-treatment with naltrexone (3 mg/kg) fully prevented the antiallodynic effect of celecoxib at 0.3, 3 and 10 mg/kg. In contrast, this dose of naltrexone only partially prevented the antiallodynic effect of celecoxib 30 mg/kg. Naltrexone and naltrindole (3 mg/kg), but not 5'-guanidino naltrindole (1 mg/kg), fully prevented the antiallodynic effect of celecoxib in diabetic rats. Conclusions: Data suggest that celecoxib produces an antihyperalgesic and antiallodynic effect in diabetic rats. These effects seem to result from activation of  $\mu$ ,  $\delta$  and  $\kappa$  opioid receptors for antinociception and  $\mu$  and  $\delta$  for antiallodynia. Celecoxib could be useful to treat neuropathic pain in diabetic patients.

Keywords: Celecoxib; Hypersensitivity; Neuropathic pain; Opioid receptors; Tactile allodynia.



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**Quality in diabetes mellitus control in Primary Care Units in Mexico. A study of the perspectives of the patient's family**

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**ABSTRACT**

Objective.-To identify the perspectives of the patient's family in the quality of diabetes mellitus control.

Design.- Qualitative methodology of exploratory design, oriented towards health services research, conducted in 2014 using non-probability sampling.

Location.- Primary Care Units mainly situated in the state of Tabasco, Mexico.

Participants and/or contexts.- 42 family members were selected, who agreed to participate voluntarily in the study.

Method.- Six focus groups were set up; interview guides and group dynamics were employed. The information was documented, saturated and categorised; the most representative discourses were used, and conclusions reached.

Results.- The results show a highly critical position of the families as regards the patient, some of which appear justified, and others have a cultural, historical, and to some extent, an ignorance connotation. They have also commented on the health care and the role that patients and families can play, in both cases, also expressed critically.

Conclusions.- The family perspectives reveal what they think and feel about diabetes mellitus. It is important to note their lack of support and the content of their expressions due to lack of knowledge of the disease. Their discourses are critical, mythical, and with false beliefs of the fear of being future carriers of the disease. They feel sorry for the patient but they resist taking care of them, and do not want a life with diabetes. The family is the closest support for patients and an invaluable human resource for health services.

**Keywords:** Qualitative research; Perspectives; Family health; Metabolic control



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**Protective Action of *Carica papaya* on  $\beta$ -Cells in Streptozotocin-Induced Diabetic Rats**

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**ABSTRACT**

The aim of the present study was to investigate the effect of *C. papaya* L. leaf extract (CPLE) on pancreatic islets in streptozotocin (STZ)-induced diabetic rats, as well as on cultured normal pancreatic cells with STZ in the medium. CPLE (3–125 mg/Kg) was administered orally for 20 days, while a group of diabetic rats received 5 IU/Kg/day of insulin. At the end of the treatment the rats were sacrificed. Blood was obtained to assess glucose and insulin levels. The pancreas was dissected to evaluate  $\beta$  cells by immunohistochemistry. In addition, normal pancreatic cells were cultured in a medium that included CPLE (3–12 mg). One half of the cultured cells received simultaneously CPLE and STZ (6 mg), while the other half received CPLE and five days later the STZ. After three days of incubation, insulin was assayed in the incubation medium. The CPLE administered to diabetic rats improved the fasting glycemia and preserved the number and structure of pancreatic islets. However, when CPLE was added to pancreatic cells in culture along with STZ, the insulin concentration was higher in comparison with the cells that only received STZ. In conclusion, the CPLE preserves the integrity of pancreatic islets, improves the basal insulin secretion and protects cultured cells from the adverse effects of STZ.

**Keywords:**  $\beta$ -cells, *Carica papaya*, diabetes, pancreatic islets



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**HOMA-IR anomalies and sugar  
consumption in young with euglycemia.**

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**ABSTRACT**

The aim of this study was to assess sugar consumption through a 24 h recall questionnaire, its quantification was performed with a Web-based application and then correlated with HOMA-IR. Seventy-four women and fifty-two men participated in the study, x 18 years old. Data were retrieved from the 24 h recall questionnaire and the amount of sugar in food and drinks was quantified. The quantities of sugar were assessed with the online application of [www.fatsecret.com.mx](http://www.fatsecret.com.mx). Likewise, we quantified glucose, triglycerides, total cholesterol, insulin, C peptide and glycosylated hemoglobin. Fifty-two (41.3%) participants presented biomarkers within desirable levels and 74 (58.7%) presented at least one value within the risk level. There were no significant differences in the average values of body mass index, waist-hip and waist-size indices between those with desirable values and those with anomalies. Among the young population with biomarkers within desirable values, 10% presented abnormal insulin and HOMA-IR values; besides, 25% of them had glycosylated hemoglobin values of  $\geq 6.2\%$ . There was a correlation between sugar consumption and HOMA-IR, ( $p = 0.007$ ). In the young population with euglycemia, anomalies in HOMA-IR and glycosylated hemoglobin values can be found. Assessment of elevated dietary sugar consumption could predict anomalies in glycosylated hemoglobin and HOMA-IR.

**Keywords:** Diabetes; Homeostatic evaluation index of insulin resistance; Prediabetes; Sugar consumption



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**Sub-patterns of food consumption and hyperglycemia in Mexican young people: a study by factor analysis**

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**ABSTRACT**

**Background:** The student population that is admitted to the University Juárez of Tabasco has poor healthy eating habits. Fasting glucose  $\geq 5.6$  mmol/L was found in 10% of the students.

**Objective:** We wanted to identify the sub-pattern of their eating habits that could explain the hyperglycemia.

**Design:** A questionnaire on the feeding habits was applied to 3,559 first-year students, who were subjected to a blood analysis to determine biochemical markers in 2011. Based on the obtained questionnaire data, the factorial analysis was used for the statistical analysis. The Kaiser–Meyer–Olkin measure for sampling adequacy was used for validation. To determine eating habits, Varimax normalization with Kaiser was used.

**Results:** The number of students with euglycemia was 3,138, including 366 with values for prediabetes, and 55 with values for diabetes. After normalization using Varimax rotation with Kaiser, component 1 of participants with euglycemia included eight foods. The number of foods in component 1 of those participants with prediabetes was seven, and it diminished to four in those with fasting glucose  $>7$  mmol/L.

**Conclusions:** It was found that glucose levels increase in direct relation to the diminution in the number of selected foods.

**Keywords:** *dietary patterns; eating habits; modern foods; prediabetes; diabetes*



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