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The works must be unpublished and refer to topics of Surgical techniques, technological innovation in nursing, drug management quality in patient care, first aid techniques, patient management and Control, patient grooming techniques and other topics related to Medicine and Health Sciences.

Presentation of Content

As first article we present, *Use and effectiveness of Artemisa ludoviciana Nuut, in the prevention of diseases in Zacatecas*, by GONZÁLEZ-GARCÍA, Arcelia, HERNÁNDEZ-SALAS, Claudia, MARTÍNEZ-ORTIZ, Rosa María and GONZÁLEZ-MARTÍNEZ, Lilia, with affiliation at the Universidad Autónoma de Zacatecas; as second article we present, *Clinical profile of patients under peritoneal dialysis treatment in the development of peritonitis in a public hospital in southern Jalisco*, by MERAZ-MEDINA, Tzintli, DELGADO-SERRANO, Daniel, GARCÍA-ORTIZ Lidia and CÁRDENAS-VILLALVAZO, Asucena, with adscription in the Universidad de Guadalajara, as third article we present, *Eating habits and physical activity in confined adults by COVID-19 in the Zacatecana community*, by CASILLAS-VILLAPANDO, Emmanuel, REYES-ESTRADA, Claudia Araceli, CAMPOS-RAMOS, Cynthia Ivett and GUTIÉRREZ-HERNÁNDEZ, Rosalinda, with secondment at the Universidad Autónoma de Zacatecas, as last article we present, *Preliminary genotoxicological evaluation and identification of chromatographic fingerprints of selected asteraceae native to the state of Nayarit*, by RODRÍGUEZ-JIMÉNEZ, Daniela Yusbizareth, ÁVILA-VILLARREAL Gabriela María, ROJAS-GARCÍA, Aurora Elizabeth and YÁÑEZ-IBARRA, Guadalupe, with affiliation at the Universidad Autónoma de Nayarit.

Content

Article **Journal of Nursing Techniques and Health**
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Use and effectiveness of *Artemisa ludoviciana* Nuut, in the prevention of diseases in Zacatecas

Uso y efectividad del *Artemisa ludoviciana* Nuut, en la prevención de enfermedades en Zacatecas

GONZÁLEZ-GARCÍA, Arcelia†*´,´´, HERNÁNDEZ-SALAS, Claudia, MARTÍNEZ-ORTIZ, Rosa María´,´´ and GONZÁLEZ-MARTÍNEZ, Lilia´,´´

´ *Universidad Autónoma de Zacatecas, Licenciatura en Químico Farmacéutico Biólogo Licenciatura en Enfermería UAE.*
´´*Unidad Académica de Odontología. Campus UAZ. Siglo XXI Carretera Zacatecas-Km.6 Ejido La Escondida Zacatecas Zac.C.P.98160. México.*

ID 1st Author: *Arcelia, González-García* / **ORC ID:** 0000-0003-0674-1072

ID 1st Co-author: *Claudia, Hernández-Salas* / **ORC ID:** 0000-0001-7492-1310

ID 2nd Co-author: *Rosa María, Martínez-Ortiz* / **ORC ID:** 0000-0001-7811-169X

ID 3rd Co-author: *Lilia, González-Martínez* / **ORC ID:** 0000-0002-3679-0070

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Abstract

In Mexican traditional medicine, the use of plants is of great importance, for example, it is practiced by its 60 ethnic groups, who use more than 5,000 plants (González-Stuart and Rivera, 2009 in Juárez-Rosete et al., 2013). In urban areas, traditional medicine is used, mainly through herbal medicine (Osuna et al., 2005). Medicinal plants in Mexico are mostly wild (Osuna et al., 2005), which is related to the local environmental knowledge of the country's ethnic groups and are not only collected for domestic use, but some species are cultivated for export to the United States and Canada (Juárez-Rosete et al., 2013). Nowadays (Artemisa ludovicina), is known as lyrically as estafíate is a species of perennial plant belonging to the Asteraceae family is used since pre-Hispanic times in traditional medicine. Because it is one of the most demanded products in Mexican herbal medicine and of economic importance for the communities living in this ecosystem, research has been carried out at INIFAP since 1989 to improve its management, which currently allows its sustainable and legal use. This study was carried out in the state of Zacatecas, whose objective was to know the use of the healing plants of the sphiate as traditional medicine, such as its preventive use for lack of appetite, as well as, for intestinal stomach infections, indigestion, stimulates the digestive system, renews the bacterial flora, diarrheal diseases, intestinal colic and parasitic intestinal colic. Results: indicate that the main peripheral areas in rural communities in the state of Zacatecas use this medicinal plant (*Artemisa ludovicina*).

Medicinal plants, Staphyte

Resumen

En la medicina tradicional Mexicana, el uso de plantas es de gran importancia, por ejemplo, es practicada por sus 60 grupos étnicos, quienes usan más de 5,000 plantas (González-Stuart y Rivera, 2009 en Juárez-Rosete et al., 2013). En áreas urbanas se recurre a la medicina tradicional, principalmente mediante la herbolaria (Osuna et al., 2005). Las plantas medicinales en México en su mayoría son silvestres (Osuna et al., 2005), lo que se relaciona con el saber ambiental local de los grupos étnicos del país y que no solo se recolectan para uso interno, sino que algunas especies se cultivan para su exportación a Estados Unidos y Canadá (Juárez-Rosete et al., 2013). Hoy en día (*Artemisa ludovicina*), es conocida como líricamente como estafíate es una especie de la planta perenne perteneciente a la familia de la Asteraceae se utiliza desde tiempos prehispánicos en la medicina tradicional. Por ser uno de los productos de mayor demanda en la herbolaria mexicana y de importancia económica para las comunidades que viven en este ecosistema, en el INIFAP desde 1989 se han realizado investigaciones para mejorar su manejo lo que permite actualmente su aprovechamiento sustentable y legal. Se llevó a cabo este estudio en estado de Zacatecas, cuyo objetivo fue conocer el uso de las plantas curativas del esfiate como medicina tradicional, como su uso preventivo para la falta de apetito, así como también, para infecciones estomacales intestinales, indigestión, estimula sistema digestivo, renovadora de la flora bacteriana, las enfermedades diarreica cólicos intestinales parasitarias. Resultados: indican que las principales áreas periféricas en las comunidades rurales en el estado de Zacatecas utilizan esta planta medicinal (*Artemisa ludovicina*).

Plantas medicinales, Estafíate

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* Author Correspondence (E-mail: arcelia2009@ live.com.mx)
† Researcher contributing first author.

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Introduction

Nowadays "*Artemisia ludoviciana* (estafiate)" is a plant used in digestive disorders, in which its whole leaves, with the stem and water are added to cook for about 15 minutes, either crushed or ground, in decoction or the whole plant, orally, as an anti gastralgic, to remedy lack of appetite and against intestinal parasites or worms. The healing plants today have been, in the effectiveness of traditional medicine, in the effectiveness in ethnomedicine in the state of Zacatecas, medicine as one of the most alternative, according to prevention, healing and cure, which was carried by the ethnographic method, to obtain information on perceptions, of healing plants. Today they are present in plants and in the environment that are used in the great traditional medicine according to the World Health Organization. (WHO) traditional medicine is a set of knowledge, skills, beliefs, experiences, values in traditional medicine preventive healing such as improved treatment of stomach diseases, diarrhea, increased bacterial flora in societies ethnomedicine refers to the study of traditional plants typical physician, focus on the interpretation of culture and health, processes medicinal care healing and health (williams,2006) the belief of healing plants for the health of society, so it is interdisciplinary.

Traditional medicine has been studied from the medical anthropology that studies the problems of human health and digestive systems, colic diarrhea, healing etc.. In its social, cultural and economic contexts; it analyzes the mediations that explain the differential ways of getting sick, being cared for and dying among individuals and certain groups, considers the characteristics and peculiarities of the relationships between people and social groups that enable or limit the resolution of their health problems (Freyermuth and Sesia, 2006, According to Aparicio (2004): "five fundamental traits define traditional medicines.

Validity as ethnomedicine (therapeutic system adapted to a specific socio-cultural and geographical environment and context that responds to the health needs of the human being). In Mexico, traditional medicine is recognized by the Ministry of Health, the Mexican Institute for the Study of Medicinal Plants and the Commission for the Use and Conservation of Biodiversity, which has a digital library on medicinal plants. In Mexican traditional medicine, the use of plants is of great importance, for example, it is practiced by its 60 ethnic groups, who use more than 5,000 plants (González-Stuart and Rivera, 2009 in Juárez-Rosete et al., 2013). In urban areas, traditional medicine is used, mainly through herbal medicine (Osuna et al., 2005). Medicinal plants in Mexico are mostly wild (Osuna et al., 2005), which is related to the local environmental knowledge of the country's ethnic groups and are not only collected for domestic use, but some species are cultivated for export. Traditional medicine is based on local environmental knowledge, is adaptive to spatio-temporal contexts and its holders are mainly the native peoples.

Methodology

This method of study of this research by longitudinal cross-sectional method. A random sample of 80 people in ages ranging from 50 to 70 years, both sexes, was considered. A questionnaire was applied through an open interview, which was supported by both qualitative and quantitative participatory research. It included the following questions:

Questions	Percentage representing affirmative responses
1.- Do you know that staphytate is used to treat gastrointestinal problems, diarrhea and to increase the bacterial flora?	55.55
2.- Do you recommend that it be consumed as water for use?	56.66
3.- Do you consider that the consumption of this plant has any benefit in the organism?	16.66

Table 1

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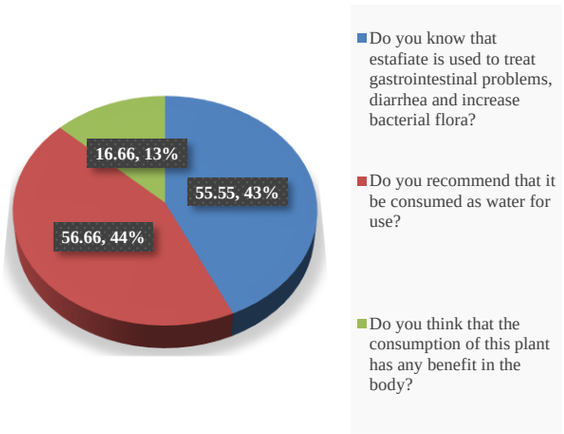
Results

From the first question, 50 of the people surveyed know the uses and benefits of estafiate, the other 40 have no knowledge about it. It is important to mention that for question 2, it increases slightly since 1 person who does not know it does not see a problem in using it as drinking water since he refers to it as a plant. The lack of knowledge of the benefits of many plants, including staphytate, has an impact on the recommendation of consumption and with it the benefits that can be obtained, since only 16.66% mention that it can bring some benefit to the organism.



Graphic 1 Percentage of people who answered affirmatively
Source: Own elaboration

Conclusions

From the above results it can be inferred that although the percentage that knows the benefits of estafiate is relatively high (50 people answered affirmatively), there is still a lack of greater diffusion of its benefits, since only one more person (51 out of 90) of the total of those surveyed recommends its use even though they do not know it, and the rest do not see it as important, since currently the influence of patent medicines is greater. The above, although this native plant has very important uses such as those mentioned above. This leads to the fact that, within the plants of traditional medicine, today we have or should work to make it known as a first plus in our society and as an alternative to increase its effective potential in stomach and digestive diseases as a preventive use in humans and other symptomatologies.

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Article **Journal of Nursing Techniques and Health**
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Clinical profile of patients under peritoneal dialysis treatment in the development of peritonitis in a public hospital in southern Jalisco

Perfil clínico de pacientes bajo tratamiento de diálisis peritoneal en el desarrollo de peritonitis en un hospital público de la zona sur de Jalisco

MERAZ-MEDINA, Tzintli†*´, DELGADO-SERRANO, Daniel, GARCÍA-ORTIZ Lidia´ and CÁRDENAS-VILLALVAZO, Asucena´

Universidad de Guadalajara, Science Health Division, University Center of South, Mexico.

ID 1st Author: *Tzintli, Meraz-Medina* / **ORC ID:** 0000-0002-2062-8618, **CVU CONACYT ID:** 131300

ID 1st Co-author: *Daniel, Delgado-Serrano* / **ORC ID:** 0000-0002-1525-9897, **CVU CONACYT ID:** 1008691

ID 2nd Co-author: *Lidia, García-Ortiz* / **ORC ID:** 0000-0002-4861-0989, **CVU CONACYT ID:** 260835

ID 3rd Co-author: *Asucena, Cárdenas-Villavalzo* / **ORC ID:** 0000-0003-4910-5906, **CVU CONACYT ID:** 93618

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Abstract

Objective. To describe the clinical profile and demographic characteristics of patients with chronic kidney disease (CKD) under treatment with PD who have developed peritonitis in a public hospital in the southern region of Jalisco. Material and methods. Cross-sectional study through clinical records of patients diagnosed with CKD under PD treatment. Contribution. CKD is an important public health problem in Mexico; it is one of the 10 leading causes of mortality in women in Mexico. The first line of treatment is peritoneal dialysis (PD); however, several extenuating factors can lead to its failure, being peritonitis the main cause of change to more complex and expensive treatments. The description of the epidemiological characteristics will provide information to the medical community for the creation of educational programs on PD hygiene and management focused on the specific needs of patients in the southern region of Jalisco.

Profile, Peritoneal dialysis, Peritonitis

Resumen

Objetivo. Describir el perfil clínico y características demográficas de pacientes con Enfermedad Renal Crónica (ERC) bajo tratamiento con DP que han desarrollado peritonitis derechohabientes de un hospital público de la región sur de Jalisco. Material y métodos. Estudio transversal analítico a través de expedientes clínicos de pacientes con diagnóstico de ERC bajo tratamiento con DP. Contribución. La ERC constituye en México un importante problema de salud pública, es una de las 10 principales causas de mortalidad en mujeres en México. La primera línea de tratamiento es la Diálisis Peritoneal (DP) sin embargo, diversas atenuantes pueden llevar al fracaso de esta, siendo la peritonitis la principal causa de cambio a tratamientos más complejos y costosos. La descripción de las características epidemiológicas aportará información a la comunidad médica para la creación de programas educativos de higiene y manejo de la DP enfocados en las necesidades específicas de pacientes de la región sur de Jalisco.

Perfil, Diálisis peritoneal, Peritonitis

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* Author's Correspondence (E-mail: tzintli.meraz@cusur.udg.mx)
† Researcher contributing first author.

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Introduction

Chronic kidney disease (CKD) is a public health problem due to its high incidence, prevalence and mortality rate, as well as its high socioeconomic cost. In Mexico, the annual incidence is approximately 45 thousand individuals, with a prevalence of 188 thousand people while the death rate is 54.1 per 100 thousand inhabitants. It is predicted that by 2025 there will be about 212 thousand cases of CKD with a death rate of almost 160 thousand deaths related to this disease (Figueroa-Lara A, *et al*., 2016).

According to data published in 2015 by the Ministry of Health, 59,754 patients were on dialysis, of which (59%) were treated with peritoneal dialysis (PD), 32% were treated with continuous ambulatory peritoneal dialysis (CAPD) and 27% with automated peritoneal dialysis (APD), while 41% were under treatment with hemodialysis (Sanchez-Cedillo A, 2020).

CKD represents an economic challenge for health systems, given that it is ranked as one of the most expensive diseases worldwide in terms of treatment-cost, it is estimated that if access to dialysis therapy were universal in Mexico, it would require an investment of more than 40% of the national budget allocated to the health sector (Cortés-Sanabria L, *et al*., 2017).

The progression of CKD is variable and depends on its etiology, in its terminal stage (ESRD) it is required to resort to renal replacement therapy (RRT), however these patients are 5 to 10 times more likely to die before reaching the terminal stage, added to this the possibility of survival is reduced when patients suffer from other comorbidities, especially in those under treatment with PD (Chang JH, *et al*., 2013).

PD is a procedure in which the peritoneum is used as a semi-permeable membrane in which a bag with dialyzing fluid is connected to a catheter previously placed in the peritoneal cavity through which constant dialysis solution exchanges are performed.

This treatment is performed at home either by the patient or by a family member, after selection, preparation and training in the technique, if this does not comply with the proper hygienic measures the patient is susceptible to infections that can lead to deterioration of the dialysis function and even lead to death (Mendez-Durán A, *et al*., 2010).

Peritonitis is one of the most common and frequent complications associated with PD, accounting for 7.6% of infections. The clinical picture of peritonitis presents with abdominal pain, nausea, vomiting, diarrhea and fever, leukocytosis and turbidity of the drained fluid. It is estimated that about two-thirds of PD patients will develop peritonitis within the first year, with a mortality rate of 2-5%. On the other hand, peritonitis can injure the peritoneum and affect the continuity of this treatment route, being one of the most common causes for migrating to hemodialysis, which increases the costs of diagnosis, hospitalization and treatment (López CM, *et al*. 2009).

Accurate diagnosis is necessary to establish guidelines for effective treatment, which allows reducing treatment costs when there are complications in PD. Peritoneal infection is the first cause of morbidity and the second cause of death in dialysis patients. There are several defined risk factors, such as the presence of Staphylococcus aureus, hypoalbuminemia, hypokalemia, vitamin D deficiency, prolonged use of antibiotics, obesity, medical procedures, exposure to pets and immunosuppression (Portolés J. *et al*, 2019).

In the last decade Mexico has shown a significant increase in the prevalence and incidence of CKD, unfortunately there is a lack of a registry of these patients, so the number of people diagnosed, their clinical profile, demographic characteristics, etc. is unknown (López 2009 Op. cit).

Like other countries, Mexico is immersed in an epidemiological transition; the aging of the population, unhealthy lifestyles and the various toxins found in the environment and in food have led to an increase in chronic degenerative diseases.

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Among the causes of CKD are vascular, glomerular, interstitial tubule and obstructive uropathies, however up to 50% of cases are due to comorbidities such as diabetes mellitus (DM), followed by systemic arterial hypertension (SAH) or a combination of both, This is the reason why the evolution of CKD is variable, from stage 1 to stage 5 known as end-stage renal disease (ESRD); however, statistics show that patients are 5 to 10 times more likely to die before reaching ESRD (López 2009 Op. cit).

The evidence from observational studies allows the development and application of disease management programs (DMPs) tailored to the clinical profile and sociodemographic characteristics, which are based on a systemic and population-based theoretical assumption for public health problems of high prevalence, complex control and involving high costs (Sánchez-Cedillo A, *et al*., 2020).

Methodology to be developed

Type of study

The study was quantitative type, because the level of analysis was considered descriptive, cross-sectional and analytical The study was conducted during the period from January 2017 to December 2019, the population was taken as the records in files of patients with CKD, with treatment in PD and who developed peritonitis attended a public institution in the South of Jalisco, Mexico.

The sample was by quotas, all patient records that met the inclusion criteria were considered in the sample. The sample consisted of n=211 patient records; the sociodemographic variables measured were: sex, age and place of origin. Clinical profile; causal agent of peritonitis, brand of dialysis bag, person responsible for care, patient comorbidity, number of refills, pharmacological treatment applied in peritonitis, time of initiation of renal replacement therapy, modality of therapy and number of episodes of peritonitis. As well as the characteristics of the appearance of peritonitis, the time of having been diagnosed with peritonitis and the objective manifestations.

The study variables considered were: the independent variable: PD as treatment of CKD, the and the dependent variable: peritonitis.

Instruments

The records of the files were used to collect the information, which is recorded by the health personnel in charge of patient surveillance and follow-up, as well as the laboratory results. It is important to mention that not all clinical records had complete information, so some tables do not show the complete sampled population.

Ethical considerations

The present research work is based on the Regulations of the General Health Law on research, taking as a basis the following articles: article 16 to protect the privacy of the person, article 17 was considered research without risk since only the data of the file were taken and the participation of the patient was not involved. Article 57 was also considered where informed consent was influenced by some authority, in this case the present study was authorized by the authorities of the institution to carry out academic and research work. For the development of the study, the application of the principles of the Declaration of Helsinki (beneficence, respect for human dignity and justice) of the World Medical Association for Medical Research Involving Human Subjects was considered. The present study was approved by the research ethics committee of the Centro Universitario del Sur of the University of Guadalajara CEI/T/06/21.

Statistical analysis

The statistical analysis was univariate descriptive for numerical data, frequency and percentage were used, and correlation tests such as Pearson's r were also run. The statistical tool Statistical Package for the Social Sciences v. 25.0 (SPSS) in Spanish and freely available was used for data processing.

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Results

Demographic characterization of the sample

A total of 211 participants from the southern part of the state (mainly Ciudad Guzmán, Zapotiltic, Gómez Farías, Tamazula, Tuxpan, Tecalitlán and Pihuamo) participated in this study; the demographic data can be found in Table 1.

In the present study there was an equal number of men and women, the predominant age of the patients is over 60 years (n=105), finally, the largest number of participants came from Ciudad Guzmán (n=104).

Clinical profile

The following characteristics were determined in the sample: the causal agent of the disease, the type of bag used by the patient, the person in charge of changing the patient's bag, the number of changes per day, the comorbidity detected in the patient and the causal agent of the peritonitis.

The most common causative agents of peritonitis in PD patients were *E. colli* (n=35) and *S. epidermidis* (n=33); however, in a large number of patients the causative agent was not identified because the required culture was not performed (n=112). As for the type of dialysis bag most frequently used, it was the Baxter type (n=112); on the other hand, the person in charge of changing the dialysis bag most frequently was a family member (n=148).

The comorbidities associated with patients with CKD were: Diabetes Mellitus type 2 and Systemic Arterial Hypertension together with the highest frequency (n=103), followed by Hypertension (n=54). In relation to the number of refills, the highest percentage of patients performed 4 fluid refills (n=108), while 43.1% (n=91) only performed one refill per day.

The main treatments applied for peritonitis were Amikacin and Cefotaxime (n=32), followed by Vancomycin, Amikacin and Cefotaxime (n=29), finally Vancomycin and Amikacin (n=15) as well as Vancomycin and Cefotaxime (n=15).

In the case of RRT initiation, 61.6% of the sample reported that they started therapy between 1 and 3 years ago (n=130), and finally the most popular therapy modality was DPA (n=108).

Among the sampled population, episodes of peritonitis occurred only once in 46% (n=97) of the patients, while 53.5% had 2 to 4 episodes since the diagnosis of CKD.

Table 7 shows the time since diagnosis of the patients, the highest percentage of patients had 1 to 3 years of diagnosis (n=126), 7.6% (16) had less than 1 year and 7.6 (16) had more than 5 years with the diagnosis. Among the symptoms of peritonitis, pain was the most frequent 40.8% (n=86) followed by pain and nausea with 19.9% (n=42) and finally 14.2% with pain and vomiting (N=42), while the most frequent clinical parameter was leukocytosis (n=157); finally, 80.1% (n=169) of the patients were still alive at the end of the present study.

Comparison between variables

In this section, by means of cross tables, data are shown in which some variables are integrated in order to know their behavior in this study.

The most frequent clinical parameters identified were leukocytosis in patients diagnosed between 1 and 3 years of age (n=94), followed by fever and leukocytosis in the same period of time of diagnosis (n=30). Leukocytosis appears as the clinical parameter that remains permanently present at any time.

In the case of patients who died, it can be seen that the older the patient, the higher the percentage of deaths.
As for the sex variable, men had a higher frequency of death than women.

In relation to the modality of therapy, there was a record of the same number of patients with type 2 diabetes mellitus and hypertension in the DPCA and DPA treatments (n=51).

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Among the treatments most frequently administered to patients with peritonitis were Vancomycin, Amikacin and Cefotaxime (n=27), followed by Amikacin and Cefotaxime (n=24), and finally Vancomycin and Amikacin (n=12), In the case of patient death, the most frequent treatment was Amikacin and Cefotaxime (n=8), followed by the application of "other" medication (n=6) and finally Amikacin and Ceftriaxone (n=5).

The relationship between the data on patients' chronic degenerative diseases and deaths shows that the most frequent comorbidity is type 2 diabetes mellitus and hypertension (n=80, n=22), for the case of patients who are still alive the next place is occupied by hypertension (n=48) and finally type 2 diabetes mellitus (n=12), in the case of death of patients, the next place was occupied by type 2 diabetes mellitus (n=7) and finally by hypertension (n=6).

In the present study it was observed that the majority of patients treated by the DPCA therapy modality (n=59) had only one episode of peritonitis, while the DPI therapy modality has the lowest frequency of peritonitis episodes (n=2), finally the rest of the subjects with different episodes of peritonitis, is located in the DPA treatment.

Regarding the relationship between the modality of therapy and the death of the patients, it can be observed that the patients who died more frequently were in DPA (n=23) and less frequently in DPI (n=0), in the case of the living patients the highest frequency of patients was in DPA treatment (n=84) and the lowest frequency in DPS (n=2).

Annexes

Variable	Frequency and percentage
Sex	
Male	103 (48.8%)
Female	108 (51.2%)
Age	
Under 40	32 (15.2%)
41 to 50 years old	27 (12.8%)
51 to 60 years old	47 (22.3%)
Over 60 years old	105 (49.8%)
Place of Origin	
Guzman City	104 (49.3%)
Gomez Farias	2 (.9%)
Other	36 (17.1%)
Pihuamo	7 (17.1%)
Tamazula	19 (9%)
Tecalitlán	10 (4.7%)
Tuxpan	13 (6.2%)
Zapotiltic	20 (9.5%)

Table 1 Demographic variables of participants
Source: Own elaboration

Variable Causative agent	Frequency and percentage
Candida	6 (2.8%)
E. beta hemolytic B	6 (2.8%)
E. colli	35 (16.6%)
Labsiella	2 (.9%)
Kiebsiella p.	2 (.9%)
Not found	112 (53.1%)
P. aeruginosus	1 (.5%)
Proteus m.	1 (.5%)
S. aeureus	10 (4.7%)
S. hemolytic	1 (.5%)
S. epiemidis	33 (12.6%)
S. pneumoniae	1 (.5%)

Table 2 Main causative agents of peritonitis in patients under treatment with peritoneal dialysis
Source: Own elaboration

Type of bag	Frequency and percentage
Baxter	112 (53.1%)
Pisa	98 (46.4%)
Who performed the exchange?	
Family member	148 (70.1%)
Patient	55 (26.1%)
Health personnel	8 (3.8)
Patient comorbidity	
Diabetes Mellitus type 2	19 (9%)
Diabetes Mellitus type 2 and Hypertension	103 (48.8%)
Diabetes Mellitus type 2, Hypertension and other disease	11 (5.2%)
Diabetes Mellitus type 2 and other disease	
Hypertension	1 (.5%)
Hypertension and other disease	
Other disease	54 (25.6%)
	1 (.5%)
	12 (5.7%)
Number of spare parts	
1 refill only	91 (43.1%)
2 to 3 refills	10 (4.7%)
4 refills	108 (51.2%)

Table 3 Clinical profile of patients under treatment with peritoneal dialysis who developed peritonitis
Source: Own elaboration

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Treatment	Frequency and percentage
Amikacin	3 (1.4%)
Amikacin, Cefotaxime	32 (15.2%)
Amikacine, Cefotaxime, Ceftiaxone	1 (0.5%)
Amikacin, Cefotaxime, Ceftiaxone, Imipenem	2 (0.9%)
Amikacin, Cefotaxime, Imipenem	1 (0.5%)
Amikacin, Cefotaxime, other	2 (0.9%)
Amikacin, Ceftriaxone	13 (6.2%)
Amikacin, Imipenem	2 (0.9%)
Amikacin, another	4 (1.9%)
Cefotaxime	1 (0.5%)
Cefotaxime, Imipenen	1 (0.5%)
Cefotaxime, other	1 (0.5%)
Cefotaxime	5 (2.4%)
Cefotaxime, Imipenen	1 (0.5%)
Cefotaxime, other	3 (1.4%)
Fluconazole	1 (0.5%)
Imipenem	5 (2.4%)
Another	14 (6.6%)
Vancomycin	7 (3.3%)
Vancomycin, Amikacin	15 (7.1%)
Vancomycin, Amikacin, Cefotaxime	29 (13.7%)
Vancomycin, Amikacin, Cefotaxime, Imipenem	2 (0.9%)
Vancomycin, Amikacin, Cefotaxime, other	3 (1.4%)
Vancomycin, Amikacin, Ceftriaxone	10 (4.7%)
Vancomycin, Amikacin, Imipenem	3 (1.4%)
Vancomycin, Amikacin, Imipenem, other	2 (0.9%)
Vancomycin, Amikacin, Other	2 (0.9%)
Vancomycin, Cefotaxime	15 (7.1%)
Vancomycin, Cefotaxime, Imipenem	2 (0.9%)
Vancomycin, Ceftriaxone	14 (6.6%)
Vancomycin, Imipenem	5 (2.4%)
Vancomycin, Imipenem, Fluconazole	3 (1.4%)
Vancomycin, another	6 (2.8%)

Table 4 Main treatments applied in peritonitis derived from peritoneal dialysis
Source: Own elaboration

TSR initiation	
Less than 1 year	16 (7.6%)
1 to 3 years	130 (61.6%)
1 to 5 years	13 (6.2%)
4 to 5 years	36 (17.1%)
5 to 10 years	1 (0.5%)
More than 5 years	15 (7.1%)
Therapy modality	
DCPA	100 (47.4%)
DPA	108 (51.2%)
DPI	2 (0.9%)

Table 5 Time of initiation of renal replacement therapy (RRT) and modality of peritoneal dialysis as therapy
Source: Own elaboration

Number of episodes of peritonitis	Frequency and percentage
1 episode	97 (46%)
2 episodes	75 (35.5%)
3 episodes	27 (12.8%)
4 episodes	8 (3.8%)
More than 4 episodes	1 (.5%)

Table 6 Percentage of episodes of peritonitis
Source: Own elaboration

Time with diagnosis	Frequency and percentage
Less than 1 year	16 (7.6%)
Less than 5 years	16 (7.6%)
1 to 3 years	126 (59.7%)
4 to 5 years	35 (16.6%)
5 to 10 years	1 (0.5%)
More than 5 years	15 (7.1%)
Symptoms of peritonitis	
Abdominal distention	8 (3.8%)
Pain	86 (40.8%)
Pain, abdominal distention	7 (3.3%)
Pain, nausea	42 (19.9%)
Pain, nausea, vomiting	12 (5.7%)
Pain, nausea, vomiting, abdominal distension	1 (0.5%)
Pain, vomiting	30 (14.2)
Pain, vomiting, abdominal distention	1 (0.5%)
Nausea	5 (2.4%)
Nausea, abdominal distention	1 (0.5%)
Vomiting	8 (3.8%
Clinical parameters	
Fever	2 (0.9%)
Fever, leukocytosis	46 (21.8%)
Leukocytosis	157 (74.4%)
The patient is still alive	
Yes	169 (80.1%)
No	41 (19.4%)

Table 7 Characteristics of the occurrence of peritonitis in patients on peritoneal dialysis and survival
Source: Own elaboration

Years in treatment under PD		<1 year	< 5 years	1 to 3 years	4 to 5 years	5 a 10 years	More than 5 years	Total
Signs of peritonitis	Fever	0	0	1	1	0	0	2
	Fever and leukocytosis	2	4	30	6	0	3	45
	Leukocytosis	13	10	94	27	1	11	156
	Total	15	14	125	34	1	14	203

Table 8 Clinical parameters of peritonitis and time to diagnosis of the patients
Source: Own elaboration

		< 40 years	41-50 years	51-60 years	> 60 years	Total
Does the patient live?	**Yes**	28	22	36	83	169
	No	4	5	11	21	41
	Total	32	27	47	104	210

Table 9 Relationship between age and morbidity due to peritonitis
Source: Own elaboration

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		Yes lives	Does not live	Total
Sex	Woman	84	18	102
	Man	85	23	108
	Total	169	41	210

Table 10 Relationship between sex and mortality in patients with peritonitis
Source: Own elaboration

		DCPA	DPA	DPI	Total
Patient comorbidities	Diabetes Mellitus type 2	9	9	0	18
	Diabetes Mellitus type 2 and Hypertension	51	51	1	103
	Diabetes Mellitus type 2, Hypertension and other disease	3	8	0	11
	Diabetes Mellitus type 2 and other disease	0	1	0	1
	Hypertension	25	28	1	54
	Hypertension and other disease	1	0	0	1
	Other disease	6	6	0	12
	Total	95	103	2	200

Table 11 Patient comorbidities according to modality of therapy
Source: Own elaboration

		Patient lives	Patient death	Total
Treatment	Amikacin	3	0	3
	Amikacin, Cefotaxime	24	8	32
	Amikacine, Cefotaxime, Ceftiaxone	1	0	1
	Amikacin, Cefotaxime, Ceftiaxone, Imipenem	1	1	2
	Amikacin, Cefotaxime, Imipenem	1	0	1
	Amikacin, Cefotaxime, other	2	0	2
	Amikacin, Ceftriaxone	8	5	13
	Amikacin, Imipenem	2	0	2
	Amikacin, another	3	1	4
	Amikacin, another	1	0	1
	Cefotaxime, Imipenen	0	1	1
	Cefotaxime, other	1	0	1
	Ceftriaxone	5	0	5
	Ceftriaxone, Imipenem	0	1	1
	Ceftriaxone, other	3	0	3
	Fluconazole	1	0	1
	Imipenem	4	1	5
	Another	8	6	14
	Vancomycin	6	1	7
	Vancomycin, Amikacin	12	3	15
	Vancomycin, Amikacin, Cefotaxime	27	2	29
	Vancomycin, Amikacin, Cefotaxime, Imipenem	2	0	2
	Vancomycin, Amikacin, Cefotaxime, other	2	1	3
	Vancomycin, Amikacin, Ceftriaxone	8	2	10
	Vancomycin, Amikacin, Imipenem	3	0	3
	Vancomycin, Amikacin, Imipenem, other	2	0	2
	Vancomycin, Amikacin, Other	2	0	2
	Vancomycin, Cefotaxime	11	3	14
	Vancomycin, Cefotaxime, Imipenem	1	1	2
	Vancomycin, Ceftriaxone	11	3	14
	Vancomycin, Imipenem	5	0	5
	Vancomycin, Imipenem, Fluconazole	3	0	3
	Vancomycin, another	6	0	6
	Total	169	40	209

Table 12 Relationship between the treatment of patients with peritonitis and associated mortality
Source: Own elaboration

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		Patient lives	Patient death	Total
Patient comorbidities	Diabetes Mellitus type 2	12	7	19
	Type 2 Diabetes Mellitus and Hypertension	80	22	102
	Diabetes Mellitus type 2, Hypertension and other disease.	10	1	11
	Diabetes Mellitus type 2 and other disease	0	1	1
	Hypertension	48	6	54
	Hypertension and other disease	1	0	1
	Other disease	9	3	12
	Total	160	40	200

Table 13 Relationship between comorbidities and mortality in patients on peritoneal dialysis
Source: Own elaboration

		DPCA	DPA	DPI	Total
Episodes of peritonitis	1	59	46	2	97
	2	35	39	0	74
	3	10	17	0	27
	4	3	5	0	8
	More than 4	1	0	0	1
	Total	98	107	2	207

Table 14 Number of episodes of peritonitis and their relationship to therapy modality
Source: Own elaboration

		Patient lives	Patient death	Total
Therapy modality	DPCA	82	18	100
	DPA	84	23	107
	DPI	2	0	2
	Total	168	41	209

Table 15 Relationship between dialysis modality and mortality
Source: Own elaboration

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Conclusions

In patients with CKD under PD treatment in patients from the southern region of Jalisco had peritonitis pictures during the first 3 years after diagnosis where the constant was that those in charge of performing the replacements were family members, on the other hand the predominance of *E. colli* and *S. epidermidis* bacteria found in the cultures performed allow establishing a base treatment for the infection according to clinical guidelines. The results obtained allow us to know more about the epidemiological characteristics of peritonitis secondary to peritoneal dialysis and thus create educational programs on hygiene and PD management according to the particularities of the population.

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Eating habits and physical activity in confined adults by COVID-19 in the Zacatecana community

Hábitos alimentarios y actividad física en adultos confinados por COVID-19 en comunidad Zacatecana

CASILLAS-VILLAPANDO, Emmanuel†, REYES-ESTRADA, Claudia Araceli, CAMPOS-RAMOS, Cynthia Ivett and GUTIÉRREZ-HERNÁNDEZ, Rosalinda*

Universidad Autónoma de Zacatecas, Nutrición, México.

ID 1st Author: *Emmanuel, Casillas-Villalpando* / **ORC ID:** 0000-0003-4077-7052, **CVU CONACYT ID:** 1263968

ID 1st Co-author: *Claudia Araceli, Reyes-Estrada* / **ORC ID:** 0000-0002-2979-6159, **CVU CONACYT ID:** 165500

ID 2nd Co-author: *Cynthia Ivett, Campos-Ramos* / **ORC ID**: 0000-0002-8775-2058, **CVU CONACYT ID**: 1245646

ID 3rd Co-author: *Rosalinda, Gutiérrez-Hernández* / **ORC ID:** 0000-0001-6803-925X, **CVU CONACYT ID**: 43665

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Abstract

The confinement by COVID-19 drastically changed the daily life of people around the world, the objective of this work was to determine changes in the way of eating and doing physical activity before and during the confinement by COVID-19 in young adults. from the community of Tacoaleche, Zacatecas; for this work an instrument was used, which was disseminated through the electronic platforms of WhatsApp and Facebook, for four weeks. 71 forms were collected, of which 52.1% were women and 47.9% men, 91.5 of the respondents are in the age range between 21 and 35 years, the eating habits of the participants presented changes since the consumption of fruits, vegetables, as well as the number of meals per day. In conclusion, it can be mentioned that there is a relationship between eating habits and physical activity, but this work showed that participants who have adequate eating habits have low physical activity.

Eating habits, Physical activity, Young adult

Resumen

El confinamiento por COVID-19 modificó drásticamente el día a día de las personas en todo el mundo, el objetivo de este trabajo fue determinar cambios en la forma de alimentarse y de realizar actividad física antes y durante el confinamiento por COVID-19 en adultos jóvenes de la comunidad de Tacoaleche, Zacatecas, para este trabajo se utilizó un instrumento, el cual se difundió a través de las plataformas electrónicas de WhatsApp y Facebook, durante cuatro semanas. Se recolectaron 71 formularios de los cuales el 52.1% fueron mujeres y el 47.9% hombres, el 91.5 de los encuestados están en el rango de edad de entre 21 y 35 años, los hábitos alimentarios de los participantes presentaron cambios ya que aumentó el consumo de frutas, verduras, así como el número de comidas al día. Como conclusión se puede mencionar que existe relación entre los hábitos alimentarios y la actividad física, pero este trabajo evidenció que los participantes que tienen hábitos de alimentación adecuados poseen baja actividad física.

Hábitos alimentarios, Actividad física, Adulto joven

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* Author's Correspondence (rosalinda@uaz.edu.mx)
† Researcher contributing first author.

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Introduction

The SARS-CoV-2 virus causes COVID-19 disease, which brought changes worldwide. On 1 December 2019 the first patient with COVID-19 infection was confirmed by clinical analysis and in January 2020 the first death from this virus was reported (Huang et al., 2020), on 11 March 2020 this disease was considered a pandemic due to the number of reported cases and the number of countries involved. This led to a mandatory isolation considering schools, jobs, family, sports and friends (World Health Organization (WHO), 2020).

By being isolated, many things came to a standstill, which allowed the population to adapt to this new reality. There are authors who mention that the fear of the unknown and uncertainty led to the development of mental illnesses, presenting stress disorders, anxiety, depression, somatisation and changes in behaviour such as an increase in drug addiction, changes in diet and very significant economic losses (Ozamiz-Etxebarria et al., 2020).

By analysing issues of this type, it is possible to propose timely strategies to address the difficulties that have arisen since the confinement, which may allow the creation of new lines of research, as they face new health problems, which although they already existed, this social historical fact was the trigger for their increase. For this reason, this type of document helps to support the different strategies that have been implemented in a practical way in the face of a wide range of social problems in terms of health.

New lines of research may emerge from this research, perhaps including more participants, adding new data collection instruments, and so on. In the same way that this research can serve as a basis for generating new hypotheses, all population groups require attention and study, as new and relevant information is needed to generate and implement actions that improve the quality of life of the population; when studying a phenomenon, it is more useful to section and attend to one area at a time, otherwise the information may not be reliable.

Eating habits

Eating habits are considered to be a set of customs that determine the behaviour of men and women in relation to the food they eat (see Figure 1). For a habit to be formed, the individual has to learn from his or her experiences from childhood to adulthood, which can be observed not only in what he or she eats but also in the way he or she selects food and the way he or she prepares it for consumption (Fernández-Castillo, 2019).

Figure 1 Good eating habits
Source: Tejada, 2022

Eating habits are acquired from paediatric stages, in the bosom of the family we learn to select food: taste, smell, colour, presentation, preparation, quantity, schedules, food availability, traditions of the family and socio-cultural environment, which is why it is a priority to educate in the good choice of nutritious food, as these will favour correct development and growth, as well as becoming permanent habits as age progresses (Méndez-Mera, 2019).

Physical activity

According to the World Health Organisation (WHO), physical activity is considered any bodily movement of skeletal muscles that involves energy consumption, even when only moving from one place to another and with little calorie expenditure, the healthy recommendation for a daily practice is 30 to 60 minutes at different intensity, which in adulthood can contribute to improve health and prevent health risks (Duque-Fernández, Ornelas-Contreras & Benavides-Pando, 2020).

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Physical activity as well as eating habits should be modified gradually, in order to avoid complications and meet the needs of each person; the world we live in today goes hand in hand with a sedentary lifestyle and the accelerated-evolutionary increase in technology, which allows ease of daily life, accompanied by an inadequate diet in terms of meal times, preparation and large amounts of fats and carbohydrates in the diet (Ramón et al., 2012).

It is very difficult to establish fixed guidelines for a population where living habits, needs, conditions, tastes and objectives that can be achieved are very varied. For this reason, it is not possible to speak of single habits and diets that fit the entire population; however, it is necessary that all nutritional needs are covered, that it allows for ideal weight control and that, as far as possible, it is attractive to each person without sacrificing sensory aspects. It is necessary, in short, that the diet is balanced and contains all the necessary nutrients according to the populations or cultures that people eat (Romanos, 2022).

COVID-19

The SARS-CoV-2 virus is the cause of COVID-19, which has a round and oval polymorphic shape, with a diameter of 60 to 140 nm. The virus and the disease were already known before the outbreak in Wuhan, which triggered the pandemic (Abreu, Tejeda & Guach, 2020).

The virus produces flu-like symptoms such as fever, cough, dyspnoea, myalgia and fatigue, including loss of smell and taste. In severe cases it is characterised by pneumonia, acute respiratory distress syndrome, sepsis and septic shock leading to death in 3% of those infected, although the mortality rate is at 4.48% and rising (United Nations (UN), 2020).

COVID-19 first appeared on 1 December 2019 in Wuhan city, capital of Hubei province in central China, the first people identified were workers in a seafood market in southern Wuhan, the number of cases increased rapidly in the rest of Hubei and spread to other territories (Brito, 2020).

There are articles that mention the importance of nutrition during the presence of COVID-19, some address nutritional therapy to increase the immune system defences and the body defends itself when in the presence of SARS-CoV-2 virus (Santana, 2020), also mentioning that sources of vitamins and minerals (micronutrients) as well as protein are essential to strengthen the immune system, The intake of three servings of fruit and two servings of vegetables, depending on the seasonality of these and the diversity in the consumption of foods of animal or dairy origin, as well as cereals and legumes, ensures the daily nutrients required by each person (Méndez, Padilla & Lanza, 2020).

In terms of food quality, variety in the consumption of different food groups per day is recommended, and if possible at each meal time, to allow for nutritional balance. Of the food groups, the importance of cereals, such as oat flakes, potatoes, sweet potatoes, tortillas, corn, bread, pasta and rice, and legumes, such as beans, lentils, chickpeas and broad beans, is emphasised, as they provide energy to the body, and in addition to being part of the food culture in the country, they have the advantage of not requiring refrigeration; it is desirable to choose whole grains and cooked or stewed legumes to increase their bioavailability.

Another food group that should be present in the diet is milk and its derivatives, as they are an excellent source of protein, calcium, vitamin D and phosphorus, and in terms of quality, it is recommended to avoid selecting artificial varieties that contain a high sugar content, as well as fatty versions, such as whole milk. Another food group that is also necessary for the entire population is food of animal origin for its protein and iron content, which is more bioavailable, but in order to improve the quality of the diet, it is recommended to preferably consume white meat two to three times a week, red meat or pork only once a week, fish and eggs three to four times a week, and it is suggested to avoid the consumption of sausages and fatty meats of any animal (Méndez, Padilla & Lanza, 2020).

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An important aspect of eating habits is the number of meals consumed throughout the day, as having a more controlled number of meals means that activities can be performed better without leaving such large spaces without eating, however, a greater number of meals does not mean that it is better; the nutritional quality of the food should also be observed. To improve the process of digestion and metabolism, the consumption of five meals a day is recommended: breakfast, lunch and dinner and two light meals between them (Vázquez et al., 2018); always taking care that any occasional snack or snack is always healthy and contains the food groups already mentioned, avoiding foods high in sugars and fats such as refined flour products, biscuits, sweet breads, sugary soft drinks and preparations such as fried foods due to their low nutritional value and the greater risk to health that they may present.

Methodology

A descriptive, observational, comparative study was conducted in a community called Tacoaleche in the city of Zacatecas, Zacatecas, using simple random probability sampling, including 71 young adults aged 20 to 30 years, sex indistinct, who live in the community and who signed informed consent to participate in the study.

An instrument was applied which was distributed via WhatsApp to the participants in Google Form formats, due to the social distancing that was being experienced. An informed consent form was included at the beginning of the form so that people could express their interest in participating in this study.

Ethical considerations

The present study complies with the considerations of the Nuremberg Code of 1947, which speaks of the voluntary consent of the subject, the person involved has the legal capacity to give consent, and the results obtained were carried out with the aim of being fruitful for the good of society. The study will avoid unnecessary physical or mental harm.

It also adheres to the universal declaration on bioethics and human rights, article 3 on human dignity and human rights, where human dignity, human rights and fundamental freedoms shall be fully respected. According to the General Health Law on Health Research of the United Mexican States, this study is considered safe.

Results

The objective of the study was to determine changes in eating and physical activity patterns before and during COVID-19 pandemic confinement in young adults in the community of Tacoaleche, Zacatecas. In this study, 71 completed forms were collected, of which 37 corresponded to women and 34 to men; these data allowed us to obtain the percentages shown in the table below 1.

	Frequency	Porcentage	Cumulative percentage
Female	37	52.1	52.1
Male	34	34	100.0
Total	71	71	

Table 1 Respondents to the survey to draw percentages by gender
Source: Own elaboration

Within the survey, the age of the people who participated was considered, since the interest was in the productive population, this allowed three age ranges to be considered as shown in table 2, it was found that the greatest number of people who answered the form were between 21 and 35 years old, and in this range 91.5 per cent were between 21 and 35 years old.

	Frequency	Porcentage	Cumulative percentage
Between 18 and 20 years old	5	7.0	7.0
Between 21 and 35 years old	65	91.5	98.6
Between 36 and 50 years old	1	1.4	100.0
Total	71	100.0	

Table 2 Survey respondents by age range
Source: Own elaboration

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When assessing the level of education of the participants, it was found that 59.2 per cent had completed higher education, followed by 21.1 per cent with incomplete higher education, 14.1 per cent with postgraduate studies and only 4 per cent with technical studies.

As mentioned above, two times were considered, one before the pandemic and the other during it, and different vegetables were considered in terms of the foods in the diet. When analysing the consumption of vegetables before the pandemic by COVID-19, it was found that of the six ranges considered (see figure 1), the most frequent was 2-3 times a week, with 43.7 percent, followed by 1 time a week, and the second highest was 2 to 3 times a week. 7 percent, followed by once a week, 4-6 times a week with the same percentage of 22.5 percent, and in a lower percentage more than 2 times a day, occasionally or never, and once a day.

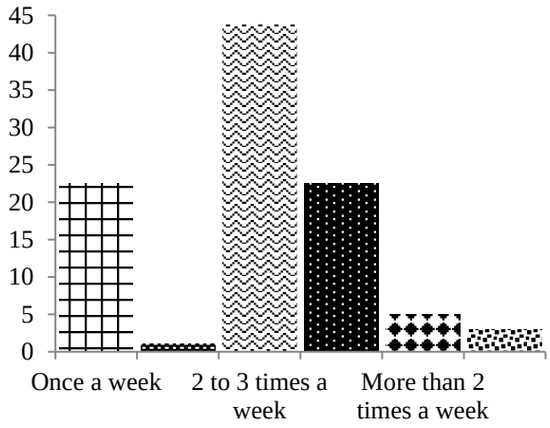

Figure 1 Pre-pandemic vegetable consumption by COVID-19
Source: Own elaboration

During the pandemic, vegetable intake behaved in a similar way to before the pandemic, since, as shown in figure 2, the highest frequency of results was also found in the range of 2-3 times a week, but with a slight decrease of 1.4 compared to before the pandemic. The same happened for the range of 1 time a week and 4-6 times a week, which showed a decrease of 8.5 and 10.5 respectively (see figure 2).

On the other hand, when evaluating the frequency of fruit consumption, a similar behaviour to that of vegetable intake was observed, but here followed by 2-3 times a week, followed by 4-6 times a week, then more than 2 times a day, followed by 1 time a week, 1 time a day and finally occasional or never (see table 3).

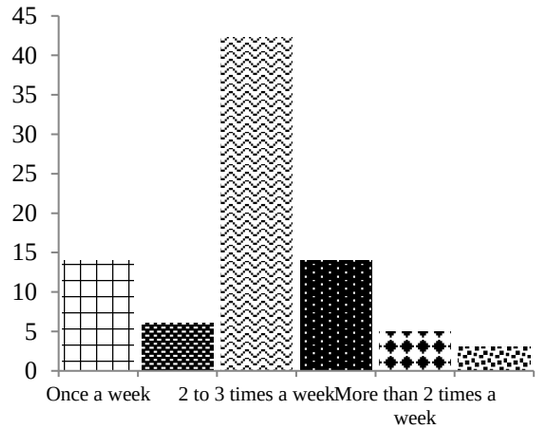

Figure 2 Vegetable consumption during a COVID-19 pandemic
Source: Own elaboration

	Frecuency	Porcentage	Cumulative percentage
1 time a week	3	4.2	4.2
1 time per day	3	4.2	8.5
2-3 times a week	28	39.4	47.9
4-6 times a week	25	35.2	83.1
More than 2 times a day	10	14.1	97.2
Occasionally or never	2	2.8	100.0
Total	71	100.0	

Table 3 Pre-pandemic frequency of consumption for fruits by COVID-19
Source: Own elaboration

The same behaviour was present when evaluated during the pandemic. Table 4 shows that the two ranges of 2-3 times a week and 4-6 times a week were those with the highest frequency, but only with a difference of 1, it was found that in the range of 4-6 times a week there was more frequency than in the range of 2-3 times a week.

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	Frecuency	Porcentage	Cumulative percentage
1 time a week	6	8.5	8.5
1 time per day	6	8.5	16.9
2-3 times a week	24	33.8	50.7
4-6 times a week	25	35.2	85.9
More than 2 times a day	8	11.3	97.2
Occasionally or never	2	2.8	100.0
Total	71	100.0	

Table 3 Frequency of consumption for fruits during the COVID-19 pandemic
Source: Own elaboration

Milk consumption before the pandemic, according to the data obtained, was above 40 per cent, in the range of 2-3 times per week, and during the pandemic there was a slight increase in the range of 4-6 times per week. Consumption of pulses before the pandemic increased from 31 participants in the range of 2-3 times per week to 40 people consuming 2-3 times per week, with a clear increase in consumption during the pandemic period.

Fish consumption before and during the pandemic had no noticeable changes, with the most notable being occasional or never consumption in both cases, snack intake before the pandemic was in the range of 2-3 times per day (40 people), followed by 4-6 times per week (13 people), whereas during the pandemic period consumption was reduced to 1 time per week (16 participants).

Soda intake before the pandemic reported a majority consumption of 2-3 times per week with a total of 30 people, but during the pandemic, intake was somewhat reduced, with occasional or never consumption being the most noticeable with a total of 26 people, followed by 17 people consuming once a week. Fried foods had a small but noticeable change in consumption before and after. From 2-3 times a week consumption was reported by 33 people, in the pandemic period consumption of more than twice a day was reduced from 1 to zero and likewise once a day.

Another aspect analysed was the consumption of food at different times at breakfast, lunch and dinner, noting that breakfast intake reported both before and during the pandemic that the majority ate breakfast with a total of 35 participants before and 38 during the pandemic. In the range of food consumption at "lunch time" before the pandemic the most notable report was daily with 25 people, moving to the pandemic period there was a slight increase with a total of 30 people, observing the same behaviour for dinner time.

If we analyse how the number of meals consumed by the participants behaved before the pandemic, we can highlight the consumption of 3 meals a day in a total of 42 participants, while during the pandemic period this was modified, with an increase in the consumption of 5 meals a day from 11 people before the pandemic to 21 people during the pandemic.

Another aspect to consider was the form of food preparation before and during the pandemic, here the form of stews predominated, with a total of 49 and 45 respectively, with a slight increase during the pandemic in the range of the cooked form from 11 to 15 respectively.

Fruit intake before the pandemic increased to 29 people, followed by 27 people consuming biscuits, sweets or fried foods. During the pandemic period, fruit consumption decreased, with a total of 16 people consuming none at all.

Food consumption outside the home before the pandemic was highlighted at a frequency of 1-2 times a week with a total of 37 people. During the pandemic it decreased slightly to 32 people. Food choice was reported mostly by taste with a total of 45 people choosing their food by taste followed by nutritional content with 26 participants. During the pandemic the changes were very noticeable, with food choice by nutritional content increasing greatly with 26 people, also increasing choice by cost with 19 people.

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Food choice by nutritional content before the pandemic was "almost never" with a total of 33 people. However, when reaching the pandemic stage, the choice of "almost always" increased from 12 to 17 people and an increase from 0 to 4 people who always check nutritional content.

Regarding physical activity, the following graph shows the physical activity performed during 7 days after the date of application of the questionnaire, with the result that the majority of survey participants did not perform intense activities (such as lifting heavy weights, digging, aerobic exercise or fast cycling), being 24 people, followed by 5 who did perform intense activities (figure 3).

When analysing the duration of time people spend doing intense physical activity according to figure 3, the majority of people who exercise do it for 60 minutes, followed by those who do it for 120 minutes.

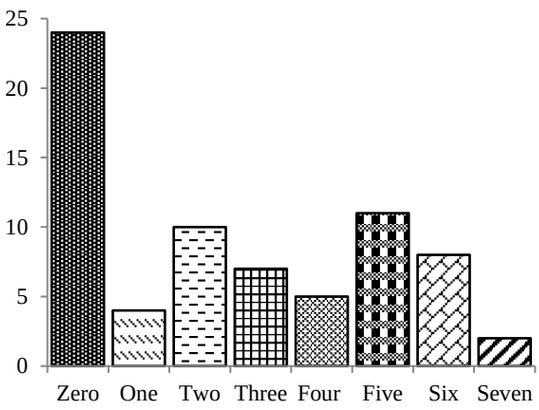

Figure 3 Intense physical activity performed
Source: Own elaboration

However, regarding the participants who performed moderate physical activity (e.g., carrying light weights, cycling at regular speed or playing doubles tennis), most of the respondents did not perform any physical activity, and the small percentage who did perform physical activity did so two to five times a week, predominantly for 20 minutes and one hour respectively (Figures 3 and 4).

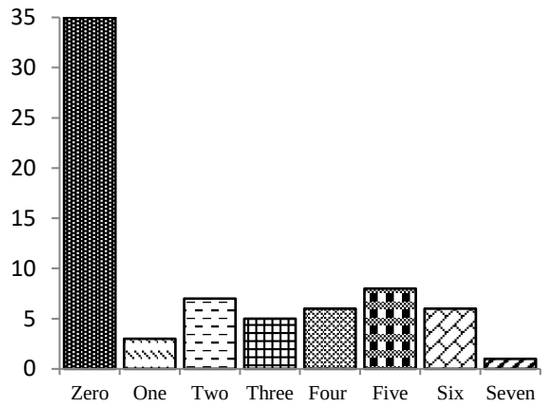

Figure 4 Moderate physical activity
Source: Own elaboration

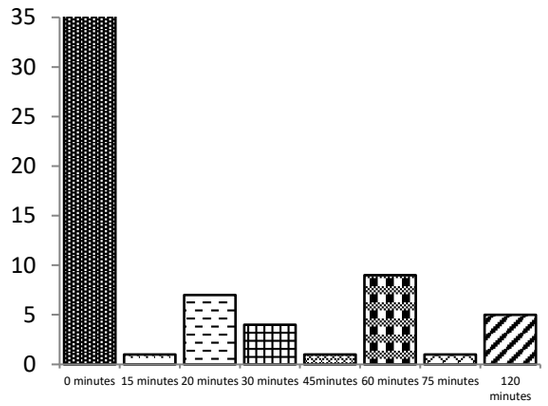

Figure 5 Time spent in moderate physical activity
Source: Own elaboration

Discussion

Of the 71 young adults who answered the form, the majority were women. This coincides with the authors De Garay & del Valle-Muñoz (2012), in their article entitled "A look at the presence of women in higher education in Mexico, in the 1999-2000 school year", where they mention that when carrying out surveys on social networks, women are the ones who respond most to them.

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Taking into account the most notable results and observing the studied population in detail, it is evident that the large number of young adults have acceptable eating habits, since their daily food intake is within the range of 3-4 meals a day, considering this amount adequate or normal, and the frequency of food consumption good, all this is contrasted by the level of physical activity that the population has, being a low level of physical activity, having a very similar result to the study of Gonzales & January (2021), in which the population studied were university students in the city of Lima, Peru. In this study, the results were in a population with adequate eating habits but low physical activity. This similarity of results could be due to the fact that the population has a similar level of education and age, as well as a similar lifestyle.

According to the results obtained in the consumption of fruit and vegetables there was a slight increase in both. Vegetable consumption increased from 0 in once a day consumption before the pandemic to 7 participants in once a day consumption. Fruit consumption increased in consumption from 4-6 times a day with a total of 25 participants before to 30 people during the pandemic. These results are very similar to the study by Apolinario Zumaeta (2020), in his study carried out in Lima, Peru, where there was an increase in the consumption of fruit and vegetables, from 4% to 8.7% in vegetables and fruit from 10% to 13.3%, a slight increase, which could be due to the pandemic situation that was experienced by having more time at home, with accessibility to food and increasing their consumption and having a more conscious choice of food.

The consumption of fried food according to the results obtained, the population showed a consumption of food between meals before the pandemic of a total of respondents 71 of them 29 responded that the majority consumption was of fruit and 28 of them of biscuits and / or snacks (sweet fried food), By the time of the pandemic the consumption of biscuits and snacks was reduced to a total of 21, however the consumption of fruit between meals was slightly increased to 3, these results are similar to the study of Apolinario Zumaeta, in which the consumption of biscuits and or snacks before the pandemic was 25. 3%, during the pandemic there was a reduction to 16.7 and of fruit from 42% to 60.7%, again taking the idea that because of the situation faced by the pandemic there was a more conscious choice when choosing food, as it was a health crisis there was too much information about general care including food and as a result a slightly healthier food and chosen in more serious ways (Apolinario, 2020).

One of the questions asked was the number of meals per day, of the 71 respondents the choice of 3 meals per day stood out with a total of 42 participants, followed by 2 meals per day with a total of 13 participants and 11 participants more than 5 meals per day. In contrast to the current pandemic situation, there was a considerable increase in the consumption of more than 5 meals per day with a total of 21 participants and a slight reduction in the consumption of 3 meals per day with a total of 35 participants and a similar reduction in the consumption of 2 meals per day with a total of 11 participants. These results are quite similar to the work of Apolinario Zumaeta (2020) in the survey on the number of meals per day, the results were as follows: before the pandemic the consumption of 2 meals per day had a consumption of 17 participants, during the pandemic 16 participants, the consumption of 3 meals before the pandemic was 90, during the pandemic 88, and finally 5 meals per day before the pandemic was 5 and during the pandemic it was 12.

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As can be observed in both cases, there was a considerable increase in the consumption of 5 meals a day and the consumption of 3 meals a day remained higher, remembering that during the pandemic there was a period of quarantine or confinement to avoid outbreaks of COVID-19 disease, and with this confinement there was more free time, resulting in the consumption of a greater number of meals a day.

Thanks

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Conclusions

The objective of this research was to find and identify the way in which young adults in the community of Tacoaleche, Zacatecas, eat and do physical activity before and during the COVID-19 pandemic. Once the data had been analysed and processed, it was determined that the eating habits of the population are acceptable, as the consumption of foods such as vegetables and fruit is part of the daily diet, and it was observed that the difference between before and during the pandemic was not so great, although the high consumption of this type of food was maintained during the pandemic. This leads to the conclusion that the pandemic did not have a significant impact on eating habits.

One aspect that had a positive influence on eating habits was the consumption of soft drinks, which was reduced from a total of 30 participants who consumed it 2-3 times a week before the pandemic to a total of 26 people, with the time of the pandemic having a positive influence. One point to highlight in which there were changes before and during the pandemic was in the choice of food, since during the pandemic the choice of food was based on practicality, followed by taste, and during the pandemic there were drastic changes, with the predominant choice being based on nutritional content, with a total of 14 in the period before the pandemic, suggesting that the increase in this aspect was due to the concern for an optimal state of health.

In the aspect of physical activity, we asked about activities carried out days before the pandemic and found that neither intense nor moderate activities were carried out, being a minority of those who practised activities, concluding that the population studied did not have habits of intense or moderate physical activity and remained so during the pandemic, the possible cause of this could be the lack of motivation due to a global crisis.

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Preliminary genotoxicological evaluation and identification of chromatographic fingerprints of selected asteraceae native to the state of Nayarit

Evaluación genotoxicológica preliminar e identificación de huellas cromatográficas de asteráceas selectas nativas del estado de Nayarit

RODRÍGUEZ-JIMÉNEZ, Daniela Yusbizareth†*, ÁVILA-VILLARREAL Gabriela María, ROJAS-GARCÍA, Aurora Elizabeth and YÁÑEZ-IBARRA, Guadalupe

Universidad Autónoma de Nayarit, México.

ID 1st Author: *Daniela Yusbizareth, Rodríguez-Jiménez*

ID 1st Co-author: *Gabriela María, Ávila-Villarreal*

ID 2nd Co-author: *Aurora Elizabeth, Rojas-García*

ID 3rd Co-author: *Guadalupe, Yáñez-Ibarra*

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Abstract

The use of plants for gastronomic and therapeutic purposes is a common practice due to their wide traditional use. Edible flowers contribute to the improvement of the aesthetic appearance of food and provide nutritional attributes, due to their high content of biologically active substances such as carotenoids, vitamins, phenolic compounds, among others. Since the organism cannot produce these chemical compounds, they must be obtained through food or in the form of food supplements. Among the edible flowers used around the world for their high content of phenolic compounds are Cosmos sulphureus Cav. (yellow mirasol) and Tagetes erecta L. (cempasúchil) plants belonging to the asteraceae family. These are distinguished by their ornamental use, in traditional medicine (TM) as muscle relaxants and in some cultures they are used as narcotics. It is important to carry out pharmacological and toxicological evaluations to correlate the traditional use that has been given to them. Therefore, the objective of this work was to conduct a study using the cytokinesis blocking micronucleus assay (CBMN) and a preliminary phytochemical profile by thin layer chromatography (TLC) and ultra-performance liquid chromatography coupled to mass spectrometry (UPLC-MS) where a genotoxic potential of these plants was observed and the preliminary chromatographic fingerprint corroborated the presence of phenolic compounds.

Edible flowers, CBMN, UPLC-MS, Genotoxicity, Phytochemical Profile

Resumen

El uso de plantas con fines gastronómicos y terapéuticos es una práctica común debido a su amplio uso tradicional. Las flores comestibles contribuyen a la mejora de la apariencia estética de los alimentos y aportan atributos nutricionales, por su alto contenido de sustancias biológicamente activas como carotenoides, vitaminas, compuestos fenólicos, entre otros. Debido a que el organismo no puede producir estos compuestos químicos, se deben obtener mediante la alimentación o en forma de suplementos alimenticios. Dentro de las flores comestibles utilizadas alrededor del mundo por su alto contenido en compuestos fenólicos se encuentran Cosmos sulphureus Cav. (mirasol amarillo) y Tagetes erecta L. (cempasúchil) plantas pertenecientes a la familia de las asteráceas. Estas se distinguen por su uso ornamental, en la medicina tradicional (MT) como relajantes musculares y en algunas culturas son usadas como narcóticas. Es importante realizar evaluaciones farmacológicas y toxicológicas para correlacionar el uso tradicional que se les ha dado. Por todo lo anterior, este trabajo tuvo como objetivo realizar un estudio mediante el ensayo de micronúcleos por bloqueo de citocinesis (CBMN) y un perfil fitoquímico preliminar mediante cromatografía en capa fina (CCF) y cromatografía líquida de ultra resolución acoplada a espectrometría de masas (UPLC-MS) donde se observó un potencial genotóxico de estas plantas y con la huella cromatográfica preliminar se corroboró la presencia de compuestos fenólicos.

Flores comestibles, CBMN, UPLC-MS, Genotoxicidad, Perfil fitoquímico

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* Author's Correspondence (E-mail: yusbi.jimenez@uan.edu.mx)
† Researcher contributing first author.

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Introduction

Flowers have traditionally been used in the cuisine of various cultures, such as European, Asian, Indian, English, and Middle Eastern, as well as being part of rituals and festivities (Takahashi et al., 2020). They can be used fresh as a garnish or as an integral part of a dish, to add colour, flavour and texture to foods such as salads, soups, entrees, desserts and beverages. Some flowers can be stuffed or used in stir-fried dishes (Belsinger, 1991). In Mexico, several flowers were consumed by indigenous people before Spanish colonisation, although some local people have maintained this habit, information on their nutritional composition is still scarce. Currently, edible flowers are regaining popularity especially for their nutritional potential, their content in bioactive compounds (Fernandes et al., 2017), as well as for their potential medicinal characteristics (Gostin, 2019). Despite being widely used in different cultures as part of the normal diet, there are no official lists of edible and inedible flowers issued by any international body. Among the edible flowers used around the world for their high content of phenolic compounds are *Cosmos sulphureus* Cav. (yellow mirasol) and *Tagetes erecta* L. (marigold) plants belonging to the Asteraceae family, which are distinguished by their ornamental use, in TM (figure 1) as muscle relaxants and narcotics (Böhm, 2001).

To correlate the traditional use it is important to perform pharmacological and toxicological evaluations, in vitro genotoxicity tests as a biomarker are used to determine mutagenic and carcinogenic effects of physical and chemical effects on cells or organisms, when evaluation models include experimental animals these should be governed by the 3 R's code (Huggins, 2003). Reduction and refinement criteria are included in the guidelines proposed by the Organisation for Economic Co-operation and Development (OECD), which internationally has published assessment guidelines in which alternative experimental models are proposed according to the needs of the trial.

Due to the absence of data in the literature related to the cytotoxicity, genotoxicity and cytostaticity of *C. sulphureus* and *T. erecta* in this work, a pilot study was carried out by testing different culture curves to define the subtoxic concentrations that would allow the evaluation of the different parameters of the cytome. Once the working concentrations of *C. sulphureus* and *T. erecta* were obtained, the micronucleus assay was performed by blocking cytokinesis in human lymphocytes, which is based on the use of cytochalasin-B, a metabolite isolated from the fungus Helminthosporum dematoideum (Cyt-B), a molecule capable of inhibiting actin polymerisation, preventing cytokinesis by slowing down the formation of the contractile ring (Zalacain, 2005). The presence of micronuclei (MN), buds, nucleoplasmic bridges, apoptotic and necrotic cells was assessed. A fundamental part of contextualising the results is to have data on the chemical profiles and types of compounds present in the evaluation samples. Having information on the metabolic profile allows us to make a correlation between the compounds present and their safety or effectiveness dose. For this study, ethanol/water (hydroalcoholic) extracts were prepared for each plant.

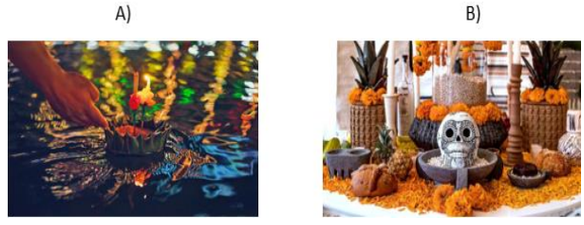

Figure 1 Use of asteraceae as part of rituals and offerings Loi krathong (A), Day of the Dead (B)

Methodology

The plant material was dried in the shade at room temperature, then crushed and subjected to a solid-liquid extraction, via cold maceration with a hydroalcoholic solution, which was carried out in triplicate. The solvent from the filtrate was removed by rotary distillation at reduced pressure and temperature in a BUCHI® R-114 rotary evaporator until dryness, leaving the hydroalcoholic extract of C. sulphureus (EH-Cs) and the hydroalcoholic extract of T. erecta (EHA-Te).

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After that, the preliminary chromatographic fingerprint of the EH-Cs and EHA-Te extracts was determined by CCF; using silica gel 60 plates with F254nm indicator with 1 mm thick Merck® brand aluminium base; different proportions of solvents were used to choose the ideal mobile phase.

The plates were visualised in ultraviolet (UV) light at short wavelength (254 nm) and long wavelength (365 nm). The spots identified at each wavelength were marked with graphite, after which they were developed. For the evaluation of CBMN, a pilot study was performed on a concentration curve of 2, 10, 25, 50 and 75 µg/mL using the extracts prepared with the plants, in each curve controls were used according to the protocol proposed by Fenech (figure 2). For the lymphocyte sample, whole blood was extracted from an apparently healthy 27-year-old male patient.

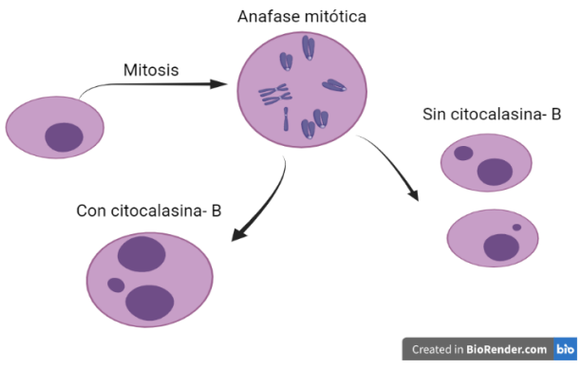

Figure 2 Micronucleus assay by blocking cytokinesis, protocol proposed by Fenech. Image taken from the Fenech protocol and recreated in BioRender

In addition, structural elucidation of the EHA-Te UPLC-MS compounds was carried out on an Acquity Waters® Bio H Class using a Waters® ACQUITY HSS T3 1.8 µm (2.1x100 mm) column. Chromatographic evaluation was carried out with the exploratory 4 min positive mode (ESI+) method with a mass scanner (MASS-SCAN) of 50-1250 Da and under the run conditions shown in table 1.

Time (minutes)	Flow mL/min	0.05 % Ammonium hydroxide (%)	Acetonitrile (%)
Initial	0.30	10	90
1.00	0.30	10	90
2.00	0.30	50	50
3.00	0.30	50	50
4.00	0.30	10	90

Table 1 Chromatographic run conditions in UPLC-MS for EHA-Te analysis

Results

The extraction yields of both plants are summarised in table 2 where it can be seen that C. sulphureus has a higher yield than T. erecta in the hydroalcoholic extraction. The preliminary chromatographic fingerprint of both plants by CCF is shown in figure 3. The ideal mobile phase for the extracts was dichloromethane/ethyl acetate in 8:2 ratio. Compounds with possible conjugated double bonds are observed on the plates due to their staining in UV light and due to their chromatographic characteristics suggest the presence of phenolic compounds in both plants and coumarin-like compounds in T. erecta.

Sample	Sample grams	Grams obtained	Performance %
EH- *Cs*	670	244	36.41
EHA-*Te*	950	72	7.60

Table 2 Yields of extractions from the collected plants

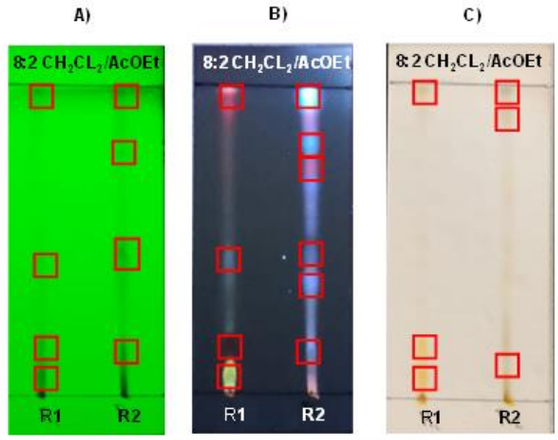

Figure 3 Chromatographic plates at short wavelength (A), long wavelength (B) and developed with 10 % sulphuric acid (C). The numbers correspond to the R1) EH-Cs, R2) EHA-Te samples

Figure 4 shows a representative image of the structures visualised from the blind reading of 1,000 binucleated human lymphocytes in the MN pilot evaluation. The results are summarised in table 3 where the different evaluation concentrations are observed, the results of the pilot study show an increase in MN of the cells treated with the extracts compared to the control, these results show an overview of the possible genotoxic activity of the plants however it is necessary to perform the concentration curve in three independent assays to verify the information obtained in the study (The results of the other parameters of the cytome are not shown).

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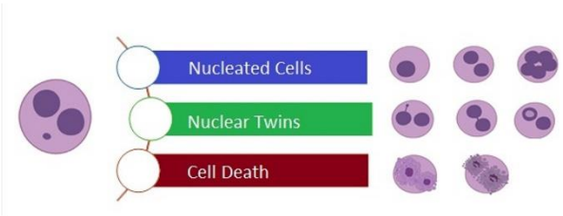

Figure 4 Representative image of the parameters visualised in the CBMN assessment (image recreated and modified for practical purposes for this summary)

	MN in 1 000 binucleated lymphocytes					
	Control	2 µg/mL	10 µg/mL	25 µg/mL	50 µg/mL	75 µg/mL
EH-*Cs*	3	6	3	4	6	4
EHA-*Te*	9	12	9	11	9	9

Table 3 MN frequency in lymphocytes treated with EH-Cs and EHA-Te. Data represent a pilot run in a duplicate experiment, data represent the frequency reading of the parameters in 1,000 binucleated lymphocytes

After analysing the results by CCF, it was decided to start with the determination of the chromatographic fingerprint of EHA-Te in order to initiate the metabolic characterisation. The UPLC-MS results corroborate what was observed in thin layer chromatography. The fragments observed in the TIC (figure 5) correspond to fragments of phenolic compounds, mainly flavonoid-like structures.

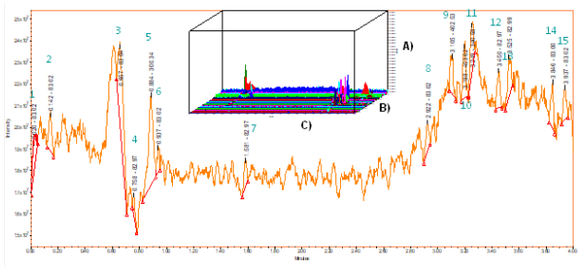

Figure 5 3D chromatogram of the EHA-Te showing the relationship of intensity (A), detected mass (B) and retention time (C) integrated to a total ion chromatogram (TIC) with at least 15 detected signal peaks

A characteristic molecular weight of 300.31 Da was observed in peak 5 of the chromatogram, for which its mass spectrum was obtained for fragment analysis (figure 6).

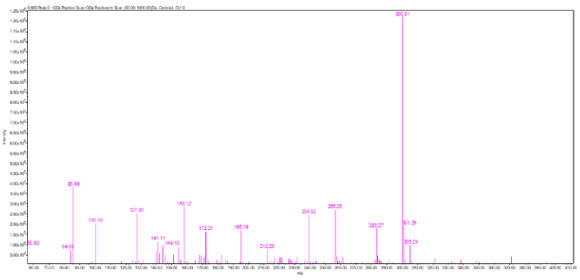

Figure 6 Mass spectrum signal detected with positive Scan with highest intensity at 300.31 m/z

Amplification of peak 5 of the hydroalcoholic extract. Fragment analysis in progress

Fragmentation pattern analysis is in progress using databases, to find a flavonoid-like structure that matches the data obtained by UPLC-MS

Discussion

Plants are widely used by the population in traditional medicine, for consumption and the development of new medicines. Therefore, it is imperative to evaluate the genotoxic potential of plant extracts during preclinical evaluation and to assess their safety, as well as to perform phytochemical profiling and isolation of molecules with possible pharmacological activity (Melo-Reis, et all 2011). MN frequency has been predominantly considered as a biomarker of chromosomal damage.

Furthermore, it has been shown that there is a significant correlation between increased MN frequency in human peripheral lymphocytes and cancer incidence, and genotoxicity is associated with vascular and autoimmune diseases, degenerative damage and premature ageing. One of the problems involved is that when the cell divides, it can inherit this damage to daughter cells, the generation of DNA damage is considered an important early event in carcinogenesis, because cells with damaged DNA are more likely to develop mutations after exposure to genotoxic agents (Durand et al., 2001) hence the importance of biomarker assays for genotoxic and chromosomal damage. Thin layer chromatography is an excellent qualitative identification method for groups of compounds of interest, coupled with ultra high performance liquid chromatography analysis coupled to mass spectrometry to identify compounds of interest and to perform phytochemical profiling of the plant with pharmacological interest.

Conclusions

The data obtained in this pilot suggest the importance of continuing with the study of the genotoxic potential of these plants, due to their wide use in traditional and gastronomic medicine, it is necessary to provide information on their safety.

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The preliminary chromatographic fingerprint in CCF and by UPLC-MS corroborates the presence of phenolic compounds and fragments corresponding to the biosynthetic route of shikimic acid, due to the chromatographic characteristics shown in the plates and the chemical background, additionally by the observed CCF the characteristic coumarin type compounds are present in *T. erecta*.

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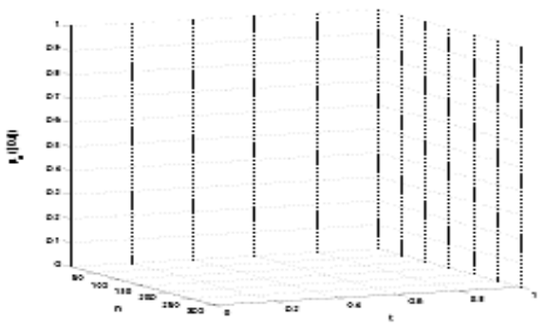

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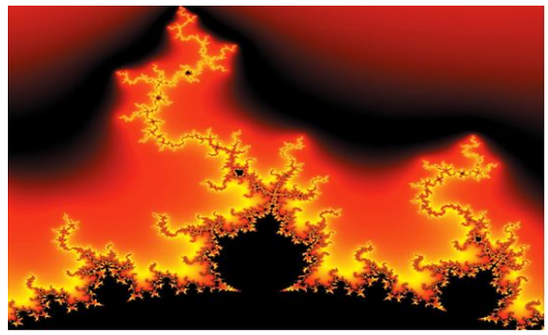

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