ORAL PRESENTATION

I. FOOD BIOTECHNOLOGY

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Formulation of food-grade bigels based on sweet potato starch and beeswax as beta-carotene carriers

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Bigels are semi-solid materials made from the combination of organic and aqueous phases [1], that can be applied for carrying, protecting, and delivering bioactive compounds, and contributing to developing texture and rheological properties in food systems. The purpose of this work was to form and characterize food-grade bigels based on sweet potato starch (SPS, 10% wt.) hydrogels and beeswax (BW, 5% wt.) oleogels, and to assess their ability to protect beta-carotene during storage. Three bigels systems were used, they were defined based on the hydrogel:oleogel ratio, 70:30, 60:40, and 50:50. Physicochemical characterization for the resultant bigels comprised rheology, optical microscopy, XRD, FT-IR, texture analysis (TPA), and color. Oleo-in-hydro-type bigels were obtained, and all the treatments exhibited pseudoplastic behavior and dominant elastic modulus (G') over viscous modulus (G"), characteristic properties reported in gelled-like systems [2]. FTIR analysis showed the presence of main functional groups present in individual SPS and BW; XRD show crystallinity patterns for the systems, indicating that bigel structuration occurred by physical interactions. Texture properties like firmness showed that bigel 70:30 exhibited the highest value, followed by bigel 50:50 and 60:40 respectively. Protection of beta-carotene in bigel systems showed good stability, non-significant changes in color ($p < 0.05$) were observed for bigel 70:30, with the greatest total color change (TCC) after 7 days of 9.84 for bigel 50:50. Based on the above, the results provide information on bigels formed with sweet potato starch and beeswax gelled-like systems, as potential encapsulants of bioactive compounds of food interest, like beta-carotene, to produce functional products with potential applications in products that require enhanced texture properties.

Keywords: *Keywords: bigels, starch, beeswax, beta-carotene, rheology, XRD.*

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Kinetic study of growth of *Aspergillus niger* HS1 using coffee pulp procyanidins as substrate in submerged fermentation.

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Procyanidins are oligomeric derivates from condensed tannins with high biological activity and recalcitrance [1]. The reduction of procyanidin content, the biomass formation and glucose consumption kinetics of *Aspergilllus niger* HS1 were investigated under different pH conditions using procyanidins as carbon source [1]. Submerged fermentations were carried out at 30 °C and 120 rpm, amber flasks with a working volume of 10 ml were used as bioreactors, pH was adjusted at two fermentation times, at the beginning and at the time of addition of procyanidins to the medium. The microorganism was grown on a basic salt medium with an initial addition of 10 g/L glucose and 1 g/L procyanidins. The objective was to evaluate the effect of pH on the disappearance of procyanidins and its correlation with mycelial biomass. In fermentations with *A. niger* HS1, growth rates of 0.028 and 0.023 h^{-1} were obtained, with exponential growth up to 120 and 96 h in treatments 1 and 2, respectively. The highest biomass concentration of 8.7 g/L was observed in treatments 1. After 20 h of the addition of procyanidins to the culture medium, a disappearance of procyanidins was obtained that ranged between 70 and 77 % for the treatments evaluated. On the third day of the bioprocess, for the tests with double pH adjustment, no procyanidin content was observed.

Keywords: *Aspergillus niger HS1, procyanidin, bioprocess, pH.*

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Novel biocontrol agent improves nutritional properties of common bean *Phaseolus vulgaris*

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The objective of this work was to analyse the impact of the volatile organic compound Nonanal as a biocontrol agent on different technological characteristics, physicochemical and nutritional properties in the common bean cultivar *Flor de Mayo Anita*. First, seven-week-old bean plants we treated with Nonanal at 0.012 mg mL-1 in lanoline past as matrix, by a period of 48h in a close-chamber, subsequently allowed to complete their growth cycle [1]. After, bean harvest we determine production, technological characteristics, physicochemical and nutritional properties. Our results demonstrated that application of Nonanal in common bean plants improves the seed production by 52%, seed weight and size by 58% and 56%, respectively. Also, Nonanal has positive impact in physicochemical properties because increased water absorption capacity by 1.5%, decreased the cooking time of bean seeds by 4.5%, increased the percent solids in broth by 29%, and the humidity by 2.2%. Besides, Nonanal increases the total phenolic compounds by 12.5%, as well as the antioxidant capacity by 3%. HPLC analysis demonstrated changes in the concentration of phenols and flavonoids. Our results suggest to Nonanal as a potential candidate to implement as eco-sustainable strategy of biocontrol in the future.

Keywords: *Biocontrol, Common bean, Nutraceutical properties, Nonanal, Sustainable, Bioenhancer.*

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Impact of germination time on triticale amylolytic activity production, enzymatic parameters and its recovery by ATPS

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The starch processing industry uses exogenous amylolytic enzymes [1], impulsing the search for sustainable sources [2]. Objective: Present research aimed to recover and characterize amilolitic enzymes from triticale (*X. Triticosecale wittmack*) malts germinated at different days (5-8 days). The malts were obtained using the standar protocol [3]. For the extraction, aqueous extracts were done by mixing ground malt with deionized water in a 1:10 (p/v) ratio, stirring at 180 rpm under conditions of 30, 120, and 270 min and 30 or 40 °C. Then for enzyme recovery, aqueous two-phase systems (ATPS) composed of ethanol, sodium citrate [4], groud malt and deionized water were applayed. The enzyme activity was characterized in terms of optimum temperature and pH, V*máx*, and *Km*. Results: The highest amylase activity was observed at day 7 of germination (213.39 α-Amylase (CU/g), 32.0 β-Amylase (BU/g)). The extract with the highest activity was obtained at 40 °C/30 min (549.64 (CU/g), 54.79 (CU/g). The best ATPS was composed of 30% ethanol/18% sodium citrate. The enzyme recovery was 97.01% for α-Amylase in the lower phase and 68.61% for β-Amylase in the upper phase, The maximum activity of α-Amylase (V*máx* 10.46/*Km* 197.1) and β-Amylase (V*máx* 30.58/*Km* 197.34) was observed for both enzymes at pH 6 and 70 °C and 60 °C, respectively. Conclusions: The aqueous extraction increased the specific enzymatic activity. The sodium citrate increase in the ATPS improved the enzymatic recovery. According to the results of temperature, pH, V*máx*, and *Km*, the enzymes obtained from triticale malt had could have application in industrial processes.

Keywords:. *Triticale, Germination, Amylolytic activity, α-Amylase, ATPS.*

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Use of biopreservation and edible films to produce an artisanal bread with extended shelf life

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Fungi spoilage is one of the most common problems in bakery industry. Chemical additives have been used for many years [1]. Their use has been questioned, because of the new trends of choosing additive free foods [2]. Natural antimicrobial and antifungal agents could be a viable alternative to this spoilage in bread and to achieve extended shelf life [3]. The aim of this work was to design and characterize an edible coating based on chitosan (QT), quinoa protein (QU) and a mixture of cinnamon (CA) and lemongrass (HL) essential oils, and to evaluate its performance on sourdough bread. Microencapsulated nisin producing *Lactococcus lactis* was added to the sourdough. A 2^2 factorial design was used, with factors QT: QU ratio (1:4 and 1:9 QT:QU) and essential oils (1:1 and 1:2 HL:CA, v/v). The physicochemical, mechanical, structural and antifungal properties of the films were evaluated. The treatments at 1:4 ratio (QT:QU) inhibited 63% of the radial growth of *Rhizopus stolonifer,* showed particle size of 2.81±0.13 µm, polydispersity index 0.77±1.4, and ζ potential of 26.4±1.3 mV. Treatments using both QT:QU weight ratios showed similar mechanical properties, while the film using 1:4 weight ratio showed more homogeneous structure by using scanning electron microscopy. *Lactococcus lactis* was microencapsulated by spray drying, achieving $2x10^6$ CFU/g and encapsulation efficiency of 80.0±0.8 %.

Keywords: *lactic acid bacteria, edible films, essential oils, biopreservation*

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Solid-state fermentation for fungal protein production in Sargassum spp.

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Pelagic *Sargassum* has become an environmental, economic, and social problem on the beaches of Quintana Roo (Mexico). A large amount of organic matter has been transferred to the coasts, for this reason, alternatives and sustainable processes are needed for the use of these seaweed. These can be used as raw material when converting to products of food interest through different biotechnological processes. Seaweed contains proteins in the range of 5-24%, the lipid content of 1-2%, minerals of 8-40% (weight/weight), respectively [1]. The objective was to evaluate the percentage of protein produced in the fermented biomass of *Sargassum spp*. The processing of *Sargassum* was using hydrothermal pretreatments (HP) at 150, 170, and 190°C for 50 minutes, the solid obtained after HP was used as substrate in solid-state fermentation to produce fungal protein using *Aspergillus oryzae* produced more fungal protein at 96h in the Petri dishes. It was observed that the microorganisms use sugars as energy sources since the concentration of total sugars is inversely proportional to the percentage of protein (6.6%). In addition, a system with aeration and using packed bioreactor columns were used to determine the yield in the production of fungal protein (8.1%). *Sargassum* pretreated at 170°C represents an efficient carbon source for the growth of *Aspergillus oryzae* and the production of fungal protein.

Keywords: *Solid-state fermentation, Sargassum spp, fungal protein, Aspergillus oyzae*

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Solid-state fermentation of edible grasshopper *Sphenarium purpurascens* with *Aspergillus oryzae*

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Solid state fermentation (SSF) can improve nutriment content of organic materials than can later be used as food [1]. This process includes the conversion of complex organic compounds into simpler ones with the help of microorganisms [2]. Among the microorganisms used to perform SSF is *Aspergillus* spp. Which can produce organic acids (like citric, lactic and ascetic acid). The present research focuses on the use of *Aspergillus oryzae* in SSF to modified *Sphenarium purpurascens*. To achieve the objectives, 10 g of freeze dried *Sphenarium purpurascens* were put inside a 30 Erlenmeyer flask and sterilized at 121°C for 15 minutes. After this, 15 ml of sterile water were added and then 1 ml containing 10^6 spores was added. Incubation took place at 30°C and with a RH higher than 90%. The evaluation times for the fermentation process were: 0.5, 1, 1.5, 2, 3, 4, 5, 6, 7 and 8 days. The highest CFU was obtained at day 8 with a value of $5.8x10^6$ CFU/g. From day 4 until day 8, pH value remained constant at 8.3. In relation to the control, protein content decreased during the fermentation. In the first days of fermentation, there was a decrease of protein percentage of 33.5%. From day 4, there is a small increment. On days 5 and 6, pH decreases again, and the lowest value was observed on day 6 with a 22.1% reduction. Chitin percentage also changes due to the fermentation. The tendency was a reduction of this value, reaching down to 0.6% on days 7 and 8. Results herein clearly indicate that *Aspergillus oryzae* could use *Sphenarium purpurascens* has substrate in SSF and that generate change in product.

Keywords: *solid state fermentation; Aspergillus oryzae; grasshopper; edible insects.*

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Effect of the postharvest application of ethylene to standardize mango ripening intended for the processing industry

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Mango (*Mangifera indica*, L.) is one of the most consumed tropical fruits worldwide, mainly because of its great flavor and nutritional content, rich in minerals and vitamins A and C. Mexico is the main fresh mango exporter worldwide, however just 12% of harvested fruit is exported, 74 % is for national trade and the remaining is industrialized [2]. Mango industry has grown permanently, mainly because of its seasonality and yearly demand. Pulp quality depends mainly on its ripening stage prior being processed as it requires fruit with a sugar content between 12 and 16 °Brix [1], and firmness between 13 and 27 N [3]. However, mango fruit has an uneven ripening, existing a necessity in evaluating methodologies that can be applied in mango industries to standardize and accelerate it. Ethylene exposure has shown an important effect manipulating fruit ripening, reducing waiting times for processing in between 3 to 5 days before that of not treated fruit [4, 5, 6], having economic savings and giving added value to that fruit. So, an evaluation of its effect in different mango fruits needs to be done. Mango fruits 'Tommy Atkins', 'Kent' and 'Keitt', were treated with 0 and 100 ppm of ethylene for 24 hours to evaluate its efficacy in advancing and standardizing ripening process during 0, 2, 4 and 6 days after treatment at 20 °C. Weight loss, fruit firmness, total soluble solids, internal and external colors, pulp acidity and pH were evaluated. Tommy Atkins and Kent mango reached pulp quality for processing at two days before that not treated fruits; meanwhile Keitt variety was not affected by ethylene application. Nevertheless, more evaluations need to be done to understand ethylene effect on the progress and uniformity of mango ripening when the fruit is intended for processing industry.

Keywords: *Mango, Ripening, Ethylene, Fresh freezing*

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Pectins from *Opuntia albicarpa*: structural and bioactive properties

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The objective of the present contribution is on the bioactivity of pectins from prickly pear (PP) (*Opuntia albicarpa*) to assess their potential as a natural antimicrobial and antioxidant agent. Two pectins from prickly pears (PP) and citrus pectin (CP), used as a reference, were examined. PP's chemical characterization and rheological behavior have been reported before [1]. They are acetylate-low methoxyl pectins with a molar mass of 204 kDa. The monosaccharide analysis of PP revealed the dominance of galacturonic acid (GalA) (> 65% w/w) and neutral sugar (galactose, arabinose, glucose, rhamnose) at varying amounts, suggesting the presence of side chains of arabinogalactan or arabinan. The differences in side-chain composition, GalA and ferulic acid contents enabled us to evaluate and compare their antimicrobial activity against two foodborne pathogens, *Listeria monocytogenes* (Gram-positive) and *Escherichia coli* (Gram-negative). The complex structure and numerous functional groups present in the pectins generated diverse functional and bioactive properties. Pectins are emerging as bioactive polysaccharides, and more studies are required to explore and explain their structure-function relationships. In this sense, pectin from prickly pears has shown advantages [2] and they can be considered promising bioactive polysaccharides.

Keywords: *Prickly pear, natural antimicrobial, biopolymer, antioxidant polymer.*

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Impact of chilacayote (*Cucurbita ficifolia*) as a brewing adjunct and the Kluyveromyces marxianus yeast on the sensory and physicochemical properties of Porter-type craft beer

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Craft beer is a fermented alcoholic beverage distinguished from others by its sensory qualities attributed to non-traditional ingredients [1]. Adjuncts have been implemented as partial substitutes for malt in brewing, such as cocoa pulp and other starchy adjuncts [2]. Although, Chilacayote (*Cucurbita ficifolia*) does not have an agro-industrial economic impact, it has high carbohydrate content which makes it a viable ingredient for beer brewing [3]. Moreover, the use of unconventional yeasts can enhance aroma and flavor, *Kluyverumyces marxianus* has biotechnological qualities such as producing volatile compounds [4]. The aim of this study was to evaluate the effect of the use of chilacayote as a brewing adjunct and the yeast *K. marxianus* on the physicochemical and sensory properties of craft porter beer. The results indicated that the proportion of 10% chilacayote (Ch) in the brewing process was the most appropriate. The impact of yeast was evaluated by 4 treatments: T1 (100% malt (M)+*S. cerevisiae*), T2 (10% Ch+90% M+*S. cerevisiae*), T3 (10% Ch+90% M+*K. marxianus*), and T4 (10% Ch+90% M+*S. cerevisiae*+*K. marxianus*). T4 showed 46% sensory acceptance compared to control T1 (28%). The yeasts' influence was observed by metabolites quantification by HPLC. Physicochemical parameters such as pH and total soluble solids decreased during the 14 days of fermentation from 5.5 a 4.7 and from 12 to 8 °Brix, respectively. The alcohol content ranged from 15 to 16% for T1, T2, and T4 is within the permissible limits [5], and an increase in color units (EBC and SRM) and international bitterness units (IBU) of the chilacayote treatments was observed.

Keywords: *Craft beer, Cucurbita ficifolia, Kluyverumyces marxianus, sensory properties.*

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Antifungal activity of crude and isolated acetogenins from Annona muricata seeds

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Acetogenins (ACGs) are compounds of high pharmaceutical interest for their biological activities such as antiviral, antitumor, and antimicrobial [1]. In this research was evaluated the antifungal activity (AA) of crude (C-ACGs) and isolated ACGs extracts (I-ACGs) from *Annona muricata* seeds. The AA of the ACGs was developed using the disc diffusion technique on agar against four *Candida* strains (*C. albicans, C. krusei, C. tropical, and C. glabrata*) [2]. The strains were grown on nutrient agar (23 g/L, pH 6.8 ± 0.2) for 24 h at 37 °C until the microbial suspensions reached $1x10^6$ CFU/mL. Sterile filter paper discs (7 mm) were placed on agar with *Candida* strains and impregnated with different concentrations (4000, 2000, 1000, 1000, 800, 400, 200, 100, 50, 25 and 12.5 µg/mL) of both extracts. The positive control was ketoconazole, and the negative controls were water and DMSO. The zone of inhibition (mm) and minimum inhibitory concentration (MIC) were measured. After the concentration of the extracts that showed the highest inhibition was selected, and the lethality (%) was determined for the two mostly inhibited strains. The results showed that C-ACGs and I-ACGs extracts exhibited a concentration-dependent antifungal activity in all the strains evaluated. However, I-ACGs extracts caused the highest inhibition ($p<0.05$) for all strains, although the strains mostly affected were *C. albicans* (14 mm) and *C. tropicals* (13 mm). The MIC values were 0.05-1.29 µg/mL for C-ACGs and 0.04-1.28 µg/mL for I-ACGs against *C. albicans, C. krusei, C. tropical, and C. glabrata*. The lethality of C-ACGs and I-ACGs extracts at 100 µg/mL for *C. albicans* were 98.6% and 92.7%, respectively, while for *C. tropicals* was 90.4% and 87.7%. In conclusion, isolated ACGs from *A. muricata* seeds are a potential source to be used as antifungal agents with potential clinical applications.

Keywords: *A. muricata, acetogenins, seeds, antifungal activity.*

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Enzyme activity characterization of solid-state fermentation of Tenebrio molitor and coffee pulp using *Aspergillus oryzae*

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The acceptance of edible insects as part of the diet is increasing due to their nutritional content. However, edible insects still present some challenges regarding short low acceptability by taste and color, and techno-functional properties of the final product added with edible insect flour [1]. Solid-state fermentation (SSF) is a recently used strategy for the edible insect to deal with mentioned challenges to improve its use in food formulations [2,3]. Filamentous fungus *Aspergillus oryzae* has been proved in the fermentation of *Tenebrio Molitor, Galleria mellonella, and Locusta migratoria*, where, flavor characteristics were improved [4,5]. The analysis of two substrates is suggested to increase its use in food formulations. It should be noted that there is no information regarding the monitoring of enzymatic activity during *A. oryzae* fermentation using edible insects as substrate. The following work performed a solid-state fermentation of *T. molitor* larvae and *coffee pulp from Coffea canephora* with *A. oryzae* and monitored the enzymatic activity generated during fermentation. To achieve the objectives, 10 g of freeze dried *T. molitor* larvae and coffee pulp were inoculated with 10^6 spores of *A. oryzae* and incubated at 30°C for 4 days. For each day it was obtained amylase activity per gram of substrate. Tenebrio as substrate obtained higher and faster amylase activity. The maximum amylase activity (0.75 and 0.74 amylase SD units/g substrate respectively) for both substrates were reached at third day getting similar results. The results indicate a feasible use of *T. molitor* larvae and *coffee pulp from Coffea canephora* as substrate in SSF for amylase production which gives an added value for food formulations. Further studies are in progress to evaluate the generation of other enzymes for food interest.

Keywords: *A. oryzae, T. Molitor, S. purpurascens, solid fermentation, enzyme activity*.

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Development of a nutritional food from fermented Sargassum combined with Chenopodium quinoa

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So far in 2022, Mexican beaches have presented 40,000 tons of *Sargassum*. It is necessary to develop technological and scientific strategies for the use of organic matter, and thus give it added value for the food, pharmaceutical, biofuel and cosmetic industries. This will allow solving social, economic, and environmental problems. *Sargassum* can be used for food development from biotechnological processes. Macroalgae contain 5-24% protein, 8-40% minerals and 1-2% lipid content [1]. Fungal protein was produced using solid-state fermentation. After this process, different formulations were developed to produce a food bar combined with *Chenopodium quinoa*, in ratios of F1 75:25%; F2 50:50%; F3 25:75% (w/w) respectively. The fungal protein was not extracted from the *Sargassum*, this biomass was used as flour for the formulation of the bars. In the control bars, only the fermented *Sargassum* was substituted. Each of the formulations underwent a proximal analysis, evaluation of hardness, adhesiveness, water retention, oil, water absorption index, water solubility index and percentage of inhibition (ABTS and DPPH). Results were obtained where it is evident that the formulations have a protein content of 20.8%±0.51;15.06%±0.15;14.6%±0.11 respectively for each of the relationships. The use of macroalgal biomass is promising to produce protein rich foods, such as nutritional bars.

Keywords: *Sargassum spp, fungal protein, food bar, Chenopodium quinoa*

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Physicochemical, microbiological and metagenomics characterization of the traditional Mazahua beverage "sende"

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Sende is a pre-Hispanic beverage obtained from the fermentation of malted corn considered a food of Mazahua origin. It is a low-alcohol drink with a great cultural richness. However, there are few studies that allow us to know its composition and benefits [1]. Therefore, the objective of this work was to evaluate the physicochemical, microbiological and metagenomic characteristics in order to generate scientific knowledge and revalue traditions of Mazahua origin from the México State. The sende was made by fermentation for 72 h. Physicochemical parameters (pH, soluble solids, and acidity) were monitored every 24 h. The quantification of carbohydrates, organic acids and ethanol was performed by high performance liquid chromatography (HPLC) [2]. The fermentative indicated a typical behavior of an alcoholic fermentation. However, the presence of lactic acid after 24 h of fermentation (0.1064 ± 0.08 mg/ml) indicates that acid fermentation also takes place. The diversity of microorganisms that participate in the fermentation of the beverage were identified for the first time *Weissella, Leucinostoc and Lactoicoccu* bacteria. The presence of the yeasts *Sacacharomyces* and Torulaspora predominantly was also determined. The result obtained will be necessary to further study the microbial composition dynamics of malted corn

Keywords: *Sende, Fermented, Kinetic, beverage*

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Phytochemical characterization of plant extracts of Capsicum chinense, Dianthus caryophyllus and Sorghum bicolor for weed control

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Weeds cause losses in various crops; for its control, chemically synthesized herbicides are the most used, however, these cause environmental and resistance problems. Due to this, alternatives have been developed for its control, such as plant extracts, since they have herbicidal activity; Within the framework of sustainable agriculture, these extracts are promising because they present characteristics such as degradability, low cost and high effectiveness [1,2]. The objectives of the present work were to identify phytochemical compounds by means of FT-IR and qualitatively, present in the extracts of *Capsicum chinense*, *Dianthus caryophyllus* and *Sorghum bicolor*. Pre-emergent growth inhibition tests were carried out on *Phaseolus vulggaris* seeds from the different extracts analyzed. From the aforementioned species, functional groups of the bioactives were identified by the FT-IR method, from possible families of alkaloid compounds, carbohydrates, flavonoids, tannins, coumarins, reducing sugars, saponins and quinones. Regarding the herbicidal activity in pre-emergence, it was observed that the extracts had an inhibitory effect 7 days after establishing the experiment, therefore, it can be concluded that the extracts present a wide variety of bioactives, which showed a percentage of inhibition. significant of 100% with the highest doses of 5000ppm, in terms of weed germination. For this reason, the use of plant extracts is proposed as an alternative for weed control.

Keywords: *Biodegradable, Glyphosate, Weeds, Extracts.*

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Ameliorating nutritional properties of orange peel through solidstate Fermentation using Rhizopus oligosporus

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With a growing population and increasing food losses generated, food security is becoming a challenging issue in many countries [1]. Furthermore, the impact of the war in Ukraine can be another factor that will increase food scarcity shortly [2]. Facing the impending threat of food security, technological innovations are required to enhance food security in all countries worldwide. Such technologies may include developing zero-waste food processing and platform technology to develop alternative food sources such as mycoprotein [3]. The present work is the first approach to food waste processing technology, particularly the development of feasible methodologies to manage orange peel sustainably. This research aims to harvest the remaining nutrients in orange peel and enhance its nutritional profile by employing solid-state fermentation. Orange peels were fermented using a generally recognized as safe (GRAS) fungi, *Rhizopus oligosporus*, at 32 ºC for 72 h. Based on the findings, fermentation gave a protein increase of 75 %, and phenolic compounds showed the same pattern with an increase of 86 %. Moreover, the ameliorating of orange peel's nutritional profile was found. In conclusion, this work valorizes orange peel through solid-state fermentation and opens the possibility of its utilization as a potential functional food ingredient for human feed.

Keywords: *Mycoprotein, Orange peel, Rhizopus oligosporus, Solid-state fermentation*

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Mango (Mangifera indica L.) seed kernel electrophoretic profile

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Mango (*Mangifera indica L.*) is a tropical fruit that stands out for its flavor, and aroma; it provides fiber, vitamins, antioxidants, minerals, and organic acids. Its processing generates up to 60% of agro-industrial wastes, such as the peel and the seed kernel, the latter of interest due to its protein content (5.25-6.39%) [1-3]. The objective of this work was to characterize the proteins of the mango kernel of the Payasito variety by electrophoresis. Proximal chemical characterization, soluble, and total reducing sugars were performed on the mango kernel flour. Protein extraction was performed by Osborne's method (Method 1 and 2), and quantification by the Bradford method, as well as characterization by SDS-PAGE. Mango seed kernel var. Payasito presented 72.58% carbohydrates, 79% starch, 11% lipids, which are the nutrients necessary for plant development. However, the presence of protein components can be of great interest in the food industry, reporting 4.83%. Characterization allowed the identification and quantification of protein fractions such as prolamins with 13.36 ± 0.19 mg/100 g (M1), and 239.49 ± 1.98 mg/100 g (M2), as well as glutelins with 89.56 ± 14.39 mg/100 g (M1), and 111.87 ± 12.39 mg/100 g (M2), which were observed in the electrophoretic profile with a molecular weight of 130 kDa and glutelins 15-70 kDa, respectively. The results show that the kernel of the criollo mango seed, Payasito variety, can be used as a source for obtaining prolamins and glutelins; these proteins can be used as ingredients in the formulation of functional foods. The use of this residue can increase the sustainability of the consumption of criollo mango varieties.

Keywords: *Mangifera indica, agro-industrial wastes, seed kernel, protein, electrophoresis.*

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