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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING INTERNASIONAL

Judul Karya Ilmiah/Artikel : Antimicrobial Activity Of Corncob Liquid Smoke And Its Aplication To Smoked Milkfish (Chanos Chanos Forsk) Using Electric And Mechanical Oven

Jumlah Penulis : 3(tiga)

Status Pengusul : Penulis pertama/ ~~penulis ke-2/ penulis korespondensi*~~

Penulis Karya Ilmiah : Swastawati F., Boesono H., Wijayanto D.

Identitas Karya Ilmiah

- Nama prosiding : International Conference on Food Security and Nutrition
- No.ISSN : 2010-4618
- Vol, No, Bln, Thn : Vol 67, No, 2014
- Penerbit : IACSIT Press, Singapore
- DOI Artikel (Jika ada) : 10.7763/IPCBE. 2014. V67. 21
- URL : <http://www.ipcbee.com/list-95-1.html>
- Alamat Web Prosiding : <http://www.ipcbee.com/>
- Terindeks di :

Kategori Publikasi Prosiding Ilmiah : ☒ Prosiding Internasional / ~~Internasional bereputasi~~
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Semarang, 17 Feb 2020
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Prof. Dr. Ir. Johannes Hutabarat, M.Sc.
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Σ Referensi : 13 (5 th terakhir).

$$b. \frac{8}{13} \times 100\% = 61,5\% \Rightarrow \frac{27}{30} \times 4,5 = 4,05$$

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Prof. Ir. Tri Winarni Agustini, M.Sc., Ph.D
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	Engineering Engineering (miscellaneous)	
	Environmental Science Environmental Science (miscellaneous)	
Publisher	International Association of Computer Science & Information Technology	
Publication type	Journals	
ISSN	20104618	
Coverage	2012	
Scope	Information not localized	

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- Started: April 2009
- ISSN: 2010-4618
- DOI: 10.7763/IPCBEE

Indexed by:

- Chemical Abstracts Services (CAS), CABL
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Is Food Insecurity Associated with Weight Status in Saudi Women?

Hala Hazam Al Otaibi^{1 +}

¹ Department of Food Sciences and Nutrition, Community Nutrition, College of Agriculture and Food Science, King Faisal University, Saudi Arabia

Abstract. Food insecurity is positively associated with overweight and obesity especially among women. The objectives of our study were to measure the prevalence of food insecurity among low-income women, and to assess the association between food insecurity and weight status, and socioeconomic status. Across-sectional study, conducted in Al-Ahsa among 147 low-income women were interviewed to collect data about socioeconomic and anthropometric measurement and indicator. Fifty seven percent of the women reported as food insecure and majority of them were married, unemployed and housewife. Mean BMI was 26.5(kg/m²) for all women which is in overweight category with significant difference between groups. The multinomial regression models shows overweight women were significantly more likely to be housewife (odds ratio= 1.43, $P = 0.05$) and food insecure (odds ratio=2.19, $P = 0.02$), and no significant association with obesity. This study demonstrated that problem of food insecurity is present in Saudi Arabia and associated with weight status and some socioeconomic factor, more effort should be directed to decreasing the level of food insecurity in the community.

Keywords: Food insecurity, obesity, overweight, Saudi Arabia.

1. Introduction

Food insecurity is “Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” [1]. Research shows food insecurity is positively associated with overweight and obesity especially among women [2]-[5]. Adams and colleagues [3], found that food insecurity without hunger is associated with increased likelihood of obesity in whites (odds ratio = 1.36) and food insecurity with hunger was associated with increased risk of obesity for Asians, Blacks and Hispanics (odds ratio = 2.81). Townsed *et al* [2], they found the prevalence of overweight in women increased as the severity of food insecurity increased among American women aged 20 years or older. Saudi Arabia is undergoing drastic nutrition transitions, the prevalence of obesity and overweight, especially in women, is a feature that is turning into a major public health problem. Al-Baghli and colleagues [6] found the prevalence of overweight was 32.8% and obesity was 45.5% in Al-Ahsa city, also they reported married women, and unemployed, low education level with low income had higher prevalence of obesity and overweight. The objectives of our study were to measure the prevalence of food insecurity among low-income women, and to determine the factors related to food insecurity such as weight status and socioeconomic status.

2. Material and Methods

2.1. Design and Subjects

This is an across-sectional study, conducted in Al-Ahsa located at The Eastern Province of Saudi Arabia. The permission to conduct the study was obtained from the Ftat Al-Ahsa Society and Al-Ber Society and the Ethic Committee of College of Agriculture and Food Science, King Faisal University, approved this study

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Bovine Beta Casein Variants: Implications to Human Nutrition and Health

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Abstract. Milk is a whole-food with numerous nutritive components; especially for infants, as milk/milk-based formulas are the only source of nutrition. However, casein free diet is recommended for infants with immunological sensitivities; yet the reason is unknown. It is hard to eliminate milk from diet of sensitive individuals. Several variants of β -casein (~25-30% of cows' milk-proteins) are genetically determined; A1, A2, A3, B, C etc. A2 is the original form of bovine β -casein and is similar to other β -casein in mammals. Additionally, A1 and A2 differ by a single amino acid, resulting in differential secondary structure and enzymatic hydrolysis, i.e. A1 but not A2 β -casein liberates the heptapeptide β -casomorphin-7 (YPFPGPL; BCM7), which acts ~morphine, and is implicated in digestive, immune and brain development changes. Biochemical reports show excess BCM7 in blood and urine samples of patients with neurological defects. Additionally, strong correlation between consumption of BCM7 containing A1 milk and incidences of type-1 diabetes mellitus, autoimmune and cardiovascular diseases is also reported. Anecdotal evidence suggests symptomatic relief in patients with neurological, gastric and immunological problems, after consuming A2 β -casein containing milk. Hence, completely eliminating milk can be avoided by consuming milk containing A2 β -casein, especially for infants' growth and development.

Keywords: A1 casein, beta casomorphin, A2 beta casein, digestive disorders, neurodevelopment.

1. Introduction

Milk is a whole-food with numerous nutritive components exploited by man for many thousands of years. With a balance of protein, carbohydrate and fat coupled with essential minerals dairy milk has been a staple food to many populations, especially for early infant development where milk and/or milk-based formulas are the only source of nutrition. Beneficial components of milk are still being identified, such as whey protein, sphingomyelin and conjugated linoleic acid (CLA), however it is established that the protein component of milk provides significant nutritional contribution itself rationalizing the consumption of milk for growing developing individuals. A major protein component of cow's milk is beta casein, of which there are two primary variants, A1 and A2. Research into the beta casein variants has reported that:

- A2 is the original form of the beta casein protein when cows were domesticated thousands of years ago, the A1 type arose and spread with breeding and migration of man.
- Digestion of A1 beta casein, but not that of A2 beta casein yields β -casomorphin-7 (BCM-7), an exogenous opioid peptide (exorphin) that can potently activate opioid receptors throughout the body
- Opioid receptors are important regulators of signalling processes throughout the body, including the gastrointestinal tract, immune system, and the central nervous system
- A2 is more comparable to the human beta casein than A1 in terms of digestive breakdown.
- Excessive exposure to A1 beta casein or BCM-7 is implicated adverse response, including interference with gastrointestinal function and symptoms of intolerance reactions.

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In-vitro Effect of *Acanthopanax senticosus* Polysaccharide on Cultured Blood Lymphocyte Proliferation and Signal Molecules in Pigs

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Abstract. This study was designed to investigate the in-vitro effect of *Acanthopanax senticosus* polysaccharide (ASPS) on proliferation and signal molecules of piglet blood lymphocyte. Peripheral blood lymphocyte suspension was prepared, and T, B cells of which were separated and co-incubated with or without various concentrations of ASPS (40, 80, 160, 320 ug/ul) separately to determine lymphocyte proliferation measured by MTT assay. The supernatant concentrations of NO secreted by lymphocyte as well as intracellular cAMP and cGMP of lymphocyte were also investigated. The results showed that T cell proliferation quadratically changed with increased ASPS level ($P<0.05$). High dose of ASPS (80, 160, 320 ug/mL) significantly improved T cell proliferation ($P<0.05$), but low dose of ASPS (40 ug/mL) had no effect on it ($P>0.05$). 80, 160ug/mL ASPS significantly improved the concentration of cAMP and the ratio of cAMP/cGMP ($P<0.05$), meanwhile, the concentration of cGMP was significantly reduced ($P<0.05$) at the 20 th and 60 th min of cell culture, and the quadratic relationship were observed in these doses ($P<0.05$). Different levels of ASPS affected significantly on NO level ($P<0.05$). These results suggested that T lymphocyte possibility can be one of the direct target cell of ASPS, and ASPS acts by affecting the concentration of intracellular cAMP, cGMP and NO of lymphocyte, which may be the messenger molecule in the lymphocytes.

Keywords: herbal extract, polysaccharide, lymphocyte proliferation, signal molecules, pigs

1. Introduction

Weaning stress and immature development of immune system are considered to be the major problems to cause attenuated performance when piglets encounter environmental pathogenic microbiota. Due to concern about feed safety and the development of antibiotic-resistant pathogens, the use of most antibiotic as growth promoters has been banned in the EU since January 2006[1]. Polysaccharide as alternative to antibiotic has been proposed in previous researches. *Acanthopanax senticosus* polysaccharide (ASPS) isolated from traditional herbal medicine has been identified as one of promising macromolecule which possesses profound effects in the regulation of immune responses during the process of infectious diseases in humans and laboratory rodents *in vivo* and *in vitro*. More recently, our research concerning ASPS as feed additives of piglets have revealed that ASPS could improve growth performance of both normal piglets and challenged piglets, stimulate lymphocyte proliferation as well as affect cytokines expression and synthesis.

Immunocyte signal transduction system is generally recognized to be closely related to immunoregulatory action of polysaccharide in previous reports, which indicated that polysaccharide activating protein kinase and ion channels by combining with immunocyte membrane receptor changes the production of intracellular signal molecule encompassing cAMP, cGMP, Ca^{2+} , and nitric oxide (NO), etc, ultimately to affect expression and production of cytokines[2], [3]. *Platycodon grandiflorum* polysaccharide -mediated induction of NO production and iNOS mRNA expression in macrophages is

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The Safety of Food Supplemented in Iron with Sprouted in Abiotic Stress Legumes Seeds - Heavy Metal Pollution

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Abstract. The objective of presented experiment was to examine how intense is the accumulation of metals contaminating culture media (lead, cadmium and chromium) from concentrated solutions of Fe²⁺. Sprouting lupine seeds tolerate the presence in the medium 25 mM of Fe²⁺, 25 mM Pb²⁺ and 35 mM Cr³⁺. The tolerance for Cd²⁺ is very low (below 2.5 mM). The high overexpression of plant ferritin is observed in sprouted seeds, during their growth in the concentrated solutions of Fe²⁺ (20 mM). The obtained total iron content was ~975 mg/100 g of their dry matter. After the introduction of 1 mM Pb²⁺ ions into the medium, the difference in the iron content was not observed, but the content of lead increased 130-fold. The introduction of 5 mM Cr³⁺ into the medium resulted in almost 50-fold increase of its content and more than 45% decrease in iron content. Industrial production of bioactive food enriched in ferritin-iron from sprouted legumes seeds requires the use of solutions with a high chemical purity to prevent accumulation in plants other toxic metals.

Keywords: lupine germination, medium composition, iron, lead, cadmium, chromium

1. Introduction

Legume seeds sprouting in hydroponic cultures with high concentration of FeSO₄ cumulate high content of iron in form of ferritin [1], which makes them useful to bioactive food construction. Ferritin in these sprouted seeds may become a potentially excellent iron supplement, especially for people with disordered processes of absorption of divalent cations, as well as for vegetarians, who still are looking for a good source of iron in food of plant origin [2].

The large-scale cultivation of plants enriched in this bioactive ingredient creates many new problems, having no significance in the laboratory scale. One of such problems is to reduce the cost of media used for the growth of these sprouts. The easiest way to reduce this cost is replacement of pure chemical compounds and deionized water for the medium growth preparation with the chemicals of technical purity and using tap water. FeSO₄ with technical purity contains many different contaminants. Among the most common impurities of technical sources of FeSO₄ should be mentioned lead, cadmium and chromium.

Plants developed various systems of defense against heavy metal ions. At first some extracellular manners, such as mycorrhiza and excretion of some exudates. And also reduced uptake and efflux pumping at the plasma membrane, systems of chelation in cytosol, compartmentation in vacuoles and finally methods of repair stress-damaged protein [3]. On the basis of these different defense system, using the medium containing a high excess of iron and some contaminants, we could expect the following results. The first: some of contaminating metal ions, present in small concentration, could be absorbed by growing plants, without any impairments in dominating ion (i.e. iron) absorption. The second: some of these metals ions may be preferentially absorbed, limiting binding of iron ions. The third, the most optimistic situation, results from

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Food Analysis to Check Quality, Safety and Authenticity by Full-Automated ^1H -NMR

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Abstract. Full-automated high resolution ^1H -NMR spectroscopy offers unique screening capabilities for food quality and safety by combining non-targeted and targeted screening in one analysis (15 - 20 minutes from acquisition to report). Full-automated high resolution ^1H -NMR (400 MHz) has found its way into the quality control of food and beverages over the last years. NMR reproducibility allows statistical investigations e.g. for detection of variety, mixing of varieties, geographical origin and adulterations, where smallest changes of many ingredients at the same time must be recorded. The non-targeted approach to the data allows detecting even unknown deviations, if they are visible in the ^1H -NMR spectra of e.g. fruit juice, wine, edible oils or honey. The same data acquired in high throughput mode are also subjected to quantification of multiple compounds. Reproducibility and transferability of the solutions shown are user-, instrument- and laboratory-independent. The method has been proven on fruit juices and wine, where so far unknown frauds could be detected. In addition conventional targeted parameters are obtained in the same analysis. This technology has additionally the advantage that NMR is completely quantitative and concentration calibration only has to be done once for all compounds.

Keywords: Non-targeted screening; targeted screening; detection of frauds; user-, instrument- and lab-independent method; detection of e.g. geographical origin, varieties

1. Introduction

High Resolution NMR Spectroscopy offers unique screening capabilities for food quality and safety by combining non-targeted and targeted screening in one analysis to supplement conventional analysis [1], [2]. The objective is to demonstrate, that due to its extreme reproducibility and transferability NMR can detect smallest changes in concentrations of many components in a mixture, which is best monitored by statistical evaluation however also delivers reliable quantification results.

2. Materials and Methods

The SGF-Profiling is providing a full ^1H -NMR-spectrum for each sample. A 400 MHz spectrometer with proton optimized detection and automatic sample changing was defined as the basis of the procedure. Strict SOP's have been established for minimized sample preparation, storage, measurement and processing.

Per registered spectrum, different interpretation routines are performed. Each interpretation of data is carried out by uni- and multivariate statistical analysis to reference models based on authentic samples (non-targeted mode). The system is calibrated with a reference database containing spectra of representative samples covering the natural variability of the examined sample type. The quality of interpretation depends on representativeness and the number of reference spectra. The databases for the food analysis are built up using certified authentic samples of juices from the industrial process. All spectra have to be acquired under identical conditions to ensure comparability. For each sample a fully signed documentation including origin and condition of processed fruits, as well as the applied technology is available to guarantee traceability.

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Antimicrobial Activity of Corncob Liquid Smoke and its Application to Smoked Milkfish (*Chanos chanos* Forsk) Using Electric and Mechanical Oven

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Abstract. The application of corncob liquid smoke to milkfish had been conducted using electric and mechanical oven in this study. The purpose of this research was to evaluate the ability of antibacterial corncob liquid smoke in various concentrations (5; 7.5; and 10%) to inhibit the growth of bacteria such as *Escherichia coli*, *Staphylococcus aureus*, *Vibrio harveyi*, and *Vibrio parahaemolyticus*. The carbonyl compounds of corncob liquid smoke was analysed by Gas Chromatography/Mass Spectrometry. Major component of carbonyl found in corncob liquid smoke were phenol; 2 methoxy phenol; anhydride formic acid and 2,6, dimethoxy phenol. The antimicrobial activity of corncob liquid smoke was effective to inhibit the growth of four microbial pathogen *Escherichia coli*, *Staphylococcus aureus*, *Vibrio harveyi*, and *Vibrio parahaemolyticus*. Examination of *t-test* independent sample to the proximate composition of smoked milkfish by corncob liquid smoke using mechanical and electric oven in terms of moisture; protein; and lipid content showed significantly different ($P < 0,05$) result.

Keywords: Corncob liquid smoke; Carbonyl compound; Antimicrobial activity; Proximate; and Milkfish.

1. Introduction

Fish smoking was traditionally used as a means of preservation of fish by wood combustion. Nowadays, liquid smoke are used as preservation of smoked fish to increase the quality of smoked fish and food safety point of view. Liquid smoke have several advantages over traditional method in terms of environmental pollution, cost, product uniformity, and safety. It is affects the organoleptic properties of smoked fish in many ways, by improving the shelf life, by its antimicrobial and antioxidant activities [1], [2], [3]. Moreover, antimicrobial activity may be better evaluated and handled. The most suitable liquid smoke for elaboration of particular foods may be chosen not only from the sensory but also the safety point of view. A potential application for liquid smoke could be contribute to product safety by controlling the growth microbial pathogens [4]. It contains phenol, acetic acid, syringol, guaiacol, catechol, eugenol, and organic acid that could destroy the walls of bacteria cells [5]. The objective of this study was to determine the inhibitory effect of corncob liquid smoke against four microbial pathogens such as *Escherichia coli*; *Staphylococcus aureus*; *Vibrio harveyi*; and *Vibrio parahaemolyticus* and chemical characteristics of smoked milkfish using commercial liquid smoke i.e. proximate value (moisture, protein, and lipid content).

2. Material and Method

2.1. Carbonyl Compound in Corncob Liquid Smoke

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