

PROTEIN CONCENTRATES AND ISOLATES FROM LUPIN CULTIVARS

(*LUPINUS MUTABILIS* SWEET AND *LUPINUS ALBUS*)

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INTRODUCTION

- **Trends and challenges - food and agriculture**

¿Concern or Hope?

- **SDGs:**



- **Protein source**

¿Animal protein or Plant protein?

- **Environmental footprint**
- **Health impacts**
- **Animal welfare concerns**



INTRODUCTION

- *Lupinus* from the legume family (Fabaceae)
- In collaboration with:
 - Fundación PROINPA
 - PANASERI
 - Hydrated “mote”
 - Dehydrated
 - Flour
 - Roasted crispy



OBJECTIVES

- **To develop of food added value**
- **To offer alternative product to PANASERI**
 - **Protein concentrates (> 70 % protein content)**
 - **Protein isolates (> 90 % protein content)**



METODOLOGY

- **Market Study (MAPIC)**
- **Experimental design (24 trials)**
 - **3 cultivars**
 - **Whole seed**
 - **Dehulled**
 - **Defatted**
- **AOAC Standards**
 - **Proximate analysis**
 - **Protein (crude) content**



Jayata



Candela



Jatunta

METODOLOGY

< 70 mesh

Extraction: Solvent to lupin ratio 10:1, 30 min, pH 8,5, room temperature

Centrifugation: 10 min, 3500 x g

Re-extraction: Solvent to residue ratio 5:1

pH adjustment: pH 4,8

Centrifugation: 10 min, 3500 x g

Washing: 3 times, pH 4,8

Drying: 60 °C



RESULTS

Market study -protein supplements (Eunice Garcia)

- **287 surveys**
 - **21 % consumption**
 - **67 % male**
 - **73 % (18 – 27 years old)**
- **73 surveys**
 - **68 % animal protein – 45 % whey protein**
 - **67 % muscle development and toning**
 - **Protein content, easily to prepare, type of protein, flavor, trade and price**
 - **85 % substitution – 71 % (50 %)**
- **Lupin protein concentrate assessment (aroma, flavor, texture, easily disolution, acceptance) 90 %**



RESULTS

	Lupin	Mean Protein Content [%]
Whole Grain	Jayata	46,03 ±0,91
	Candela	45,27 ±0,68
	Jatunta	33,51 ±0,18
Kernel	Jayata	49,09 ±0,22
	Candela	49,46 ±0,10
	Jatunta	39,77 ±0,22

	Lupin	Mean Protein Content [%]
Whole Grain	Jayata	69,86 ±0,33
	Candela	69,52 ±0,52
	Jatunta	67,56 ±0,62
Kernel	Jayata	77,39 ±0,37
	Candela	70,01 ±1,24
	Jatunta	74,85 ±0,61
Deffated Whole Grain	Jayata	94,03 ±0,42
	Candela	96,57 ±0,19
	Jatunta	94,95 ±0,45
Defatted Kernel	Jayata	94,33 ±0,75
	Candela	94,29 ±0,15
	Jatunta	95,44 ±0,09

CONCLUSION

- **Protein concentrates (> 70 %) were obtained from kernel without defatting**
- **Protein isolates (> 90 %) were obtained from defatted whole seed and kernel**
- **Jayata and Candela had higher yields than Jatunta**
- **Yield was higher when lupin seed was subject to dehulling and defatting**

THANK YOU

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