



Universidad Católica  
de Santa María

Principal Applicant:

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Researcher in Food Science

Universidad Católica de Santa María (UCSM)

Arequipa - Peru

**Area of relevant expertise:** Biological and Agricultural Sciences

**Current Research Line at UCSM:** Applied biochemistry and biotechnology for the study of the health-relevant functionality of foods and bioactive compounds from Peruvian Food and Plant Biodiversity.



- ❖ Arequipa (southern city in Peru).
- ❖ Non-profit private university with around 14000 students (graduate and undergraduate).
- ❖ Vice-presidency of Research: 116 research projects (external and own resources) (from 2013 to the present).

## Current problem

- ✓ Peru is the 3rd country in Latin American with more cases of overweight and obesity (53.8% of Peruvian people)<sup>1</sup>.

### Increase in NCCD:

- ✓ Hyperglycemia and diabetes: 23% and 7% of prevalence in adults, respectively<sup>2</sup>.
- ✓ Hypertension: 24% of prevalence in adults (2010)<sup>3</sup>
- ✓ Still double burden of NCCD and malnutrition (iron deficiency in children)

1. <http://www.observateperu.ins.gob.pe/>

2. Seclén, S. 2015. Diabetes mellitus en el Perú: hacia dónde vamos. *Rev. Med. Hered*, 26:3-4.

3. Ruiz Mori, E. 2015. Epidemiología de la hipertensión arterial en el Perú. *Diagnostico*, 54:179-183.

## Previous work

Bioactive compounds and health-relevant functional properties of cereals and legumes from Peru and Latin American

- ✿ Ranilla, L.G.; Apostolidis, E.; Genovese, M. I., Lajolo, F. M.; Shetty, K. 2008. **Evaluation of indigenous grains from the Peruvian Andean region for antidiabetes and antihypertension potential using *in vitro* models.** *Journal of Medicinal Food*, 2: 704-713.
- ✿ Gonzalez-Muñoz, A.; Quesille-Villalobos, A.M.; Fuentealba, C.; Shetty, K.; Ranilla, L.G. 2013. **Potential of Chilean native corn (*Zea mays* L.) accessions as natural sources of phenolic antioxidants and *in vitro* bioactivity for hyperglycemia and hypertension management.** *Journal of Agricultural and Food Chemistry*, 61:10995-11007.
- ✿ Ranilla, L. G.; Christopher, A.; Sarkar, D.; Shetty, K.; Chirinos, R.; Campos, D. 2017. **Phenolic composition and evaluation of the antimicrobial activity of free and bound phenolic fractions from a Peruvian purple corn (*Zea mays* L.) accession.** *Journal of Food Science*, 82:2968-2976.

## Potential proposal:

**Areas:** Novel food crops, food systems and double burden of obesity and malnutrition

**Title:** “Exploring the South Andean Peruvian food systems as sources of novel grain crops with nutritional potential along with health benefits for the management of hyperglycemia and hypertension”

Specific objectives:

- ✿ To identify most important traditional cereals and legumes from the South Andean Food Systems and to document their traditional preparations *in situ*.
- ✿ To screen the nutritional potential (macro and most relevant micro nutrients) of raw and prepared grain crops under traditional preparations.
- ✿ To screen the anti-hyperglycemia, antioxidant and the anti-hypertensive potential using *in vitro* models of raw and prepared grain crops under traditional preparations.
- ✿ To select most promising grain crop (cereal/legume) and to validate biochemical results with *in vivo* models for potentially understand the mechanism of action and metabolites linked to observed bioactivity.