Can we create a sustainable functional food market using Australian native plant foods?

Dr Smita Chaliha

Creating an Australian cuisine through traditional Australian foods
“Whole foods along with fortified, enriched or enhanced foods that have a potentially beneficial effect on health when consumed as part of a varied diet on regular basis at effective levels based on significant standards of evidence”.

- The Academy of Nutrition and Dietetics
Growing health awareness leading to increased consumption of healthier foods/products

Growing incidence of chronic diseases

Global functional foods market by country/region, 2013 (% value)

- **Japan**: 43%
- **US**: 41%
- **Europe**: 15%
- **Australia**: 1%

*Source: Food, Functional, Health, Industries, Nutraceutical, 2014*
Hidden hunger and Food insecurity

“The state of being without reliable access to a sufficient quantity of safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life’.

- United Nation’s Food and Agriculture Organization

In Australia

• Indigenous people (24%);
• Unemployed people (23%);
• Single parent households (23%);
• Low-income earners (20%);
• Rental households (20%); and
• Young people (15%).
Lack of diet diversity & Hidden hunger

Hidden hunger

- **Impaired brain development** in children – learning difficulties & problem in performing work later in life.

- **Stunting** in children.

- Increased **risk of diseases** in children - 10x more likely to die from preventable diseases.

- People on Western diet – **40% less beneficial gut microbes** than hunter-gatherer tribesmen.

- **Deteriorating** soil health

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Same calories, but only one contains vitamins necessary for growth and development

- Carbohydrate
- Zinc
- Iron
- Vitamin A
- Vitamin C

[https://almedalabs.com/hidden-hunger/](https://almedalabs.com/hidden-hunger/)

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**Soil to Soul: Combating Hidden Hunger**

Kew 2016; FAO 1997
Sustainability issues...

Soil degradation

~24% of the world’s farmland is affected by serious degradation (FAO 2008)

Lake Chad-- a source of water to millions of people in West Africa

Water scarcity

More than 5 billion people could suffer water shortages by 2050

Source: UNEP, International Soil Reference and Information Centre (ISRIC), World Atlas of Desertification
17 Sustainable Development Goals
Australian native plants

Enhanced antioxidant activity

Lemon myrtle
Anise myrtle
Tasmanian Pepper Leaf
Riberry
Quandong
Muntries
Desert lime
Green finger lime
Red finger lime

Exploring phytochemicals

Bioactive and nutritional potential

Health promotion

Phytochemicals
Functional food & ingredient
Traditional medicinal plant
Why native plants are great candidate for...

Addressing diet diversity issues...

- **Kakadu plum** *Terminalia ferdinandiana*
  - Ellagic acid, Vit C, Vit E, P, K, Ca, Mg

- **Lemon myrtle** *Backhousia citriodora*
  - Vit A, Vit E, Folate, Ca, Zn, Mg

- **Wattle seeds** *Acacia species*
  - K, Ca, Fe, Zn

Addressing sustainability issues...

- Well suited to the harsh and diverse Australian climate.
- Do not need pesticides, fertilizers, or watering → great for the environment and economical.
- Native plants reduce erosion, limit runoff, and remove excessive plant nutrients from the water → Protect water quality.
- Provide habitat, shelter and food for native wildlife → Protects biodiversity.

**Boonjie Tamarind** → Eaten by Musky Rat-kangaroos and cassowaries

**Functional food ingredient !!!!**

**Promote sustainability !!!!**
Kakadu plum (*Terminalia ferdinandiana*)

- **WA** and **NT** → different environmental conditions.
- **Medicinal** > **food**.
  - Treatment of cold and flu, headache.
  - Use as antiseptic and soothing balm.
  - Consumed → on hunting trips for quick energy and to quench thirst.
  - Pounded and soaked → **acidic drink**.
- **Wild harvest**.
  - Orchard plantation has began.
Ascorbic acid
Gallic acid
Ellagic acid
Vitamin E

Antioxidant
Anti-inflammatory
Antimicrobial

Ideal functional food ingredient
10% growth/annum for all KP products nationally & internationally

Review of existing value chains to improve efficiencies of competing groups as well as processing methods, new products and the distribution of KP products.

CRC NA project: Improving the efficiency of Kakadu Plum value chains
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Existing Aboriginal suppliers of Kakadu Plum in the Daley River Port Keats Land Trust region of NT and Kimberley region of WA

Mapping, analysing and identifying efficiencies of value chains

Identifying impediments and solutions to overcoming them

Innovative solutions to local processing and maintaining fruit quality

Development of new commercial applications

CRCNA objectives
Governance structure

Steering committee

- Contracted partners
  - University of Queensland
  - Traditional Homeland Enterprise
  - Charles Darwin University

- Indigenous Research Partners (Supporting various research elements)
  - Kimberley Institute
  - The Karajarri Traditional Lands Association.
    - Lombadina Aboriginal corporation.
    - Yawuru Native Title Holders
    - Twin Lakes Cultural park.
  - Wild Orchard Kakadu Plum Pty Ltd.
Key Project Objectives

1. Improve KP Value Chains
   - Map existing VCs, understand their efficiencies & determine how to improve.

2. Quality & safety of current commercial KP products
   - Determine levels of bioactives & Microbiological safety.

3. Training in enterprise development
   - Training tools for product costing, start-up businesses, hygienic processing of food and QA.

4. IP & benefit sharing
   - Indigenous participation in enterprises & ensure indigenous ownership and control.

Progress local viable sustainable industries, create income and employment in regional area of Northern Australia.
Growing northern Australia through research and development

We invest in industry-led research collaborations to lower investment barriers and enable significant capital to flow leading to:

- Increased investment in northern Australia
- Generate new jobs in northern Australia to help grow the region’s population
- Improved supply chain efficiencies across northern Australia
- Improved capabilities and wellbeing of the northern Australian community
- Increased GDP in northern Australia

Strategic objectives
We acknowledge the Traditional Owners of the lands on which the botanicals we study are harvested, and respect the knowledge and experience the Traditional Owners hold regarding the care, harvest and use of these plants.

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