



Bioactives from Australian agrifood by-products

Preliminary opportunity assessment

2025

EXECUTIVE SUMMARY



Executive summary

This report

CSIRO Futures was commissioned by AgriFutures Australia to identify preliminary opportunities for Australia's agriculture and food industries to supply bioactive raw ingredients to the complementary medicines industry. This involved developing a model that estimated the potential supply of bioactives within byproducts across the Australian agrifood sector, with insights supplemented and validated through interviews with experts across research, industry and government. The report aims to drive industry development by raising awareness around the potential scale of the opportunities and mapping out important next steps around assessing commercial validity.

Agricultural and food processing industries generate large volumes of by-products currently directed to low value uses.

These by-products often do not generate profits for farmers or producers. Given the resources used to grow these by-products, and in some cases, the cost of managing them, together with a challenging business environment for agriculture and manufacturing in Australia, value-adding to these by-products could represent diversified revenue streams.

Australia's complementary medicines industry is currently reliant on international imports for almost all raw ingredients.

A key challenge faced by complementary medicines manufacturers is an under-developed sovereign raw ingredients industry. It is estimated that Australian manufacturers import around \$1 billion of raw materials annually, representing around 99% of their requirements.¹ The industry would value more options to onshore its supply chain, should these options remain competitive

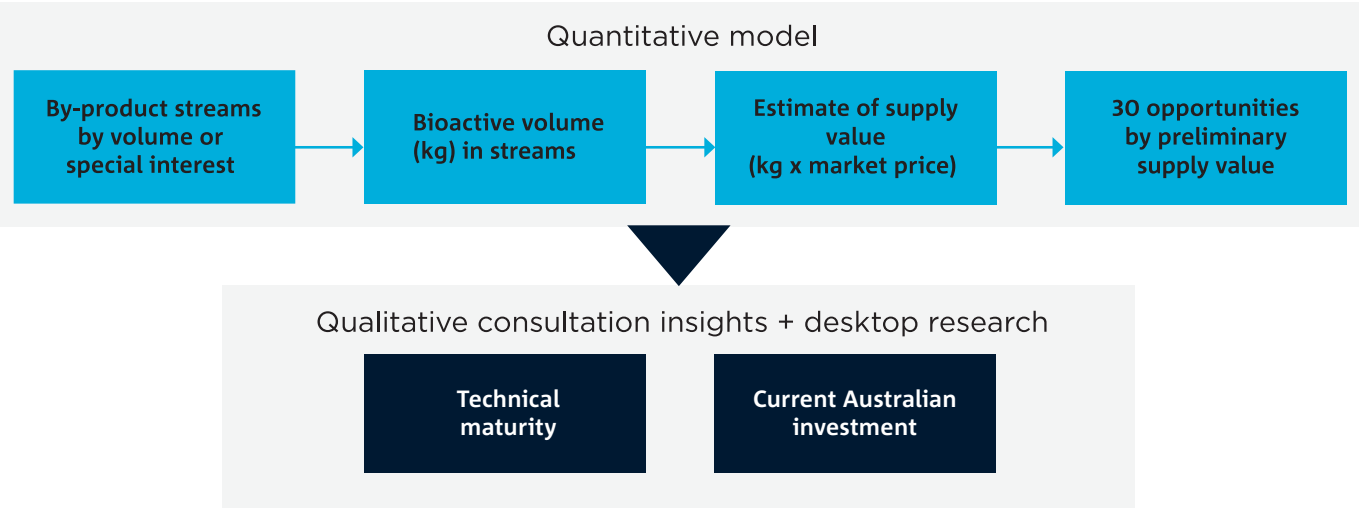
in terms of supply, price and quality. Driving this is the desire to reduce vulnerability from geopolitical and climate threats, and support sustainability claims of products.

Working together, there is an opportunity for agriculture and food processors to divert by-products towards the Australian and international complementary medicines manufacturing industries by extracting and isolating high value bioactive compounds.

Bioactive extraction from agricultural and food by-products is an early-stage emergent industry with very few commercial examples in Australia. However, appetite exists from both sectors should key metrics around quality and cost be met.

By focussing on by-products currently allocated to lower value uses, a quantitative model was developed to identify 30 preliminary opportunities which represent high volume and value by-product stream / bioactive combinations. Qualitative research was then undertaken to provide initial assessments of technical maturity and Australian commercial investment (Figure 1).

Figure 1: Opportunity analysis methodology



¹ NICM (2023) Securing the future of complementary medicines manufacturing in Australia. A strategic business case. Health Research Institute. Western Sydney university. DOI: 10.26183/kj2q-ee25

Five prospective opportunities were identified for commercial validation

Prospective opportunities of untapped potential were selected from the top 30 by considering where technical progress has been demonstrated in some capacity, but where relatively limited investment has been observed in Australia (Figure 2). While there are more mature opportunity areas (e.g., beef bioactives), these five represent areas where further commercial analysis would be valuable rather than duplicating existing analyses.

Consulted stakeholders provided further insights into the development of the emergent bioactive extraction industry, including:

- Prioritising scale of supply, quality and price is important. Dedicated innovative businesses and new business models may be needed.
- A staged approach to reaching complementary medicines grade outputs may derisk the scale-up

(e.g., targeting functional food markets while developing complementary medicines ingredients).

- Avoid short lived trends when identifying candidate bioactive ingredients.
- Identifying areas at risk of climate disruption may be strategically valuable.
- Collaboration between industries, R&D, and enabling policies is critical.

Next steps: A structured approach is needed to validate commercial feasibility prior to investment.

Vital to progressing any opportunity is collaboration between potential suppliers (agriculture and food processors) and complementary medicines manufacturers to ensure both are working towards a shared understanding of supply quantities, quality and pricing. A structured and staged approach for assessing the commercial validity of identified opportunities is provided within the report (Figure 3).

Figure 2: Prospective opportunities



Figure 3: Stage gate approach to determining the commercial viability of prospective bioactive extraction opportunities.



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