

final report

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Powdered Meat Technology Feasibility Trials

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Executive summary

Co-products within the Australian red meat industry typically have a short 'shelf life' window in which stabilising for value-added products can be considered before being rendered or such. While bioactives are being viewed as a desirable part of this added value net, processing or recovery of the co-products in a stabilised and functional form is often too expensive for the relatively small volumes recovered at the scattered facilities around Australia.

Five red meat co-products, being bone, lung, hide, blood and meat trim, have been evaluated for stabilising microbiologically through moisture reduction. This process utilises an innovative adaptation of a fluid energy mill that incorporates a mechanical rotor as the supply of fluidising energy. Lung, hide and blood have been found to process effectively and are recommended for further assessment.

The products generated have been assessed for their functionality and potential applications, recognising that more information will be required to specify the optimum bioactive alternative. Assessment of the milling/drying process, as it could be applied to these red meat co-products, was also completed to enable requirements to be identified for design optimisation. Some aspects of the process common to all products are:

Significant benefits:

- a) the processing is simple and very fast (a few seconds at most)
- b) it could be easily automated and will likely require minimal supervision
- c) the mill will likely be a leased asset
- d) the products were all processed with temperatures below 60°C
- e) it has the potential to stabilise most co-products with development
- f) It has a small foot-print.

Concerns:

- a) the Intellectual Property (IP) is not owned or shared by MLA
- b) the process has a high pitched noise component and requires good ear protection
- c) the process as operated does not pasteurise or sterilise
- d) the process is still in development
- e) Maintenance evaluation has not yet been conducted.

While there are aspects of this process that are not well characterised or optimal, its ability to dry blood at under 60 °C, from 80% to 10% moisture resulting in a water activity of 0.5 (below dried fruit or honey), in less than one second, is unique and worth exploiting.

The owner of the technology is a small engineering firm (Aximill) that has engaged an overseas manufacturer (Pallman) to manufacture the equipment on their behalf. Equipment is currently being built for development of wear knowledge by Pallman. Modification of their equipment for MLA's requirements will likely be necessary before further investigations can continue as the level of control of process flows is basic at best.

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It is recognised that this exciting and novel process is still in its development stage and that to take it from where it is with respect to Australian red meat co-products to being widely adopted by MLA stake holders (abattoirs) will require a little effort and time.

Future work should include product concept validation for bioactive constituents with a suitable research entity, employing technology adoption of efficient, existing processes for their recovery, thereby mitigating risk and improving market up-take. Additionally, where appropriate, process evaluations should be progressed to start utilising mills for existing co-products.