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MICROPRESS, an innovative tool for microextraction of seed oil

Yannick Bellec, Bertrand Dubreucq, Jean Denis Faure, Martine Miquel and Frédérique Tellier
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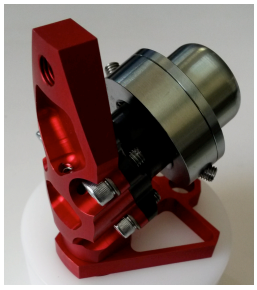
Abstract

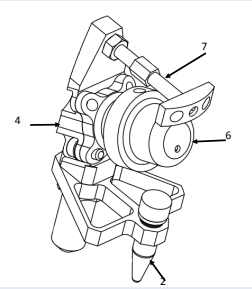
The MICROPRESS project was born from a need of pressing small amounts of seeds to extract oil for research purposes. Several prototypes were built using centrifugation to crush and extract pure oil from as little as 100 mg of seeds (camelina, rapeseed or arabidopsis or even a single soybean seed) but also microalgae or yeasts.
The patented system is able to extract oil from up to 6 samples in a single run (provided the presence of 6 devices) in less than 15 minutes. Micropress recovers more than 80% of seed oil at room temperature without any solvent. The oil has an identical TAG profile as the whole seed.
Micropress not only speeds up analysis of oil yield and profile in breeding programs since it requires much less material to identify elite lines but it provides an unique tool to investigate oil biophysical and biochemical specific properties.

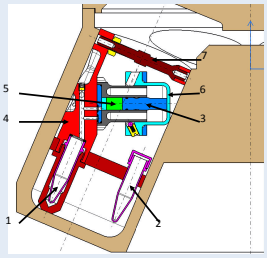


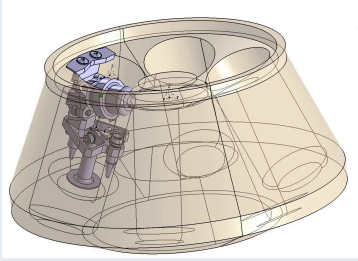
Results

The MICROPRESS uses the centrifuge force to extract and separate a liquid (oil) from a solid (seeds).

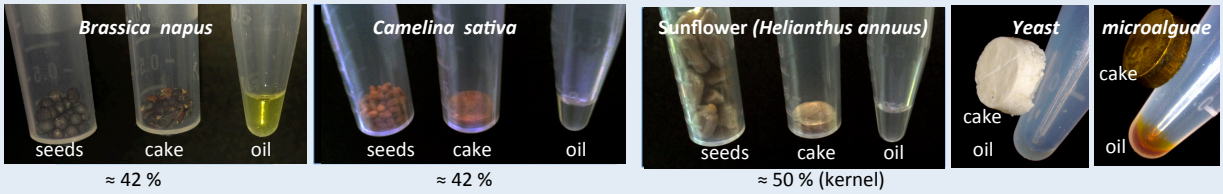
1- Receptacle tube
2- Equilibrium tube
3- Piston
4- Main body
5- Sampling material
6- Pressing weight
7- Clamping nut





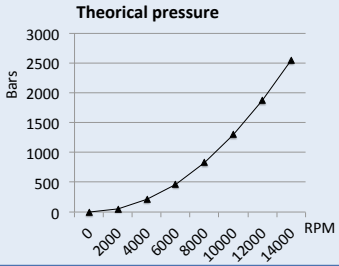


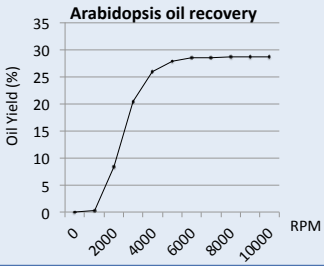
The micropress extracts oil from a large variety of seeds and microorganisms (yeast and microalgae)

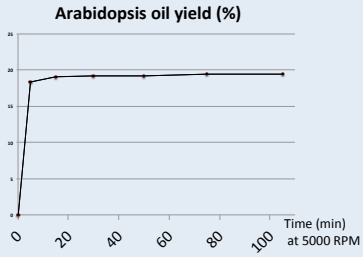


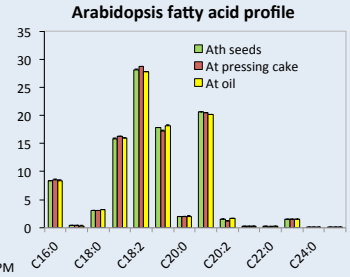
	Brassica napus	Camelina sativa	Sunflower (Helianthus annuus)
Theor. Oil cont.	≈ 42 %	≈ 42 %	≈ 50 % (kernel)
Pressed Oil cont.	**30-35 %**	**30-35 %**	**45-50%**

The design allows fine tuning of pressure range combined with rapid and high oil yield recovery









Conclusions / Prospects

- Samples << 1g
- Extract oil from seeds, yeast and microalgeae
- Oil recovery in a test tube – ready to analyze or process
- Simultaneous pressing and oil recovery
- Possibiliy to process 6 samples in a single run
- Easy to clean

How to use micropress:

- **micropress extraction could be provided as commercial service (scientific collaboration could be discussed)**
- **selling of the prototype is under way**

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