



Unlock extraction efficiency with a Rotavapor®

The experiment was conducted by first homogenizing the sample and weighing individual components. After placing the sample into the extraction chamber, distillation was started. The process was terminated, when the yellow color of the distillate after passing the extraction chamber completely disappeared (lack of fat). After the extraction step, the solvent was evaporated from the evaporating flask yielding the extracted fat.

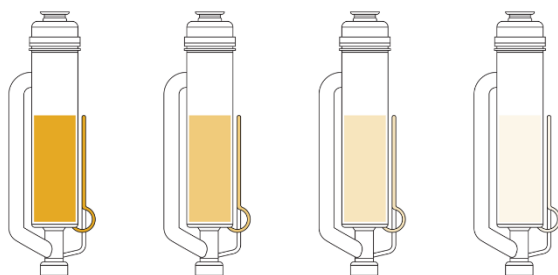


Fig. 3: Extraction progression on a laboratory Rotavapor® with a Soxhlet accessory. Lighter color corresponds to reduction of fat.

## 4. Results

	Laboratory scale	Industrial scale
Initial sample weight [g]	Ca 100	Ca 800
Extracted fat in the evaporating flask (%)	9.63	9.17
Fat loss of the sample (g)	9.69	80.1
Average distillation rate [mL/min]	58.3	141
Process time [min]	45	75

Table 3: Result comparison

The experiments show that one can extract close to (if not) all the fat from the initial sample with a laboratory or industrial Rotavapor® extraction system. Small deviations in the results could come from too short extraction time, instrument deviations and sample losses during the process.

## 5. Advantages

An industrial Rotavapor® is able, due to the larger surface area of the flask, to distill 2.4x more heptane and extract almost 5x more fat during the same time in comparison to the laboratory Rotavapor® using the same extraction conditions. This means that the R-220 Pro Extraction can successfully be used to scale up the extraction process, previously evaluated on a laboratory Rotavapor®.

## 6. Limitation

In contrast to a laboratory version, where cycles can be easily monitored and calculated, there is no automatic cycle changing on an industrial Rotavapor®. The whole process is based on diluting the sample in the extraction chamber with fresh solvent. However, if required, one can still manually induce a draining step at a chosen time.

## 7. References

[1] [https://en.wikipedia.org/wiki/Soxhlet\\_extractor](https://en.wikipedia.org/wiki/Soxhlet_extractor)