

### Fat determination in avocado *FatExtractor E-500 SOX: Determination of fat content in fresh avocado using Soxhlet extraction*

Traditionally, avocados (*Persea americana*) are mainly used in the latin american diet, where it is an important part of any dish or used for the famous Guacamole sauce. Nowadays, avocados are increasingly popular all around the world. One reason behind the increasing demand is its unique composition. Hardly any other fruit provides as many important nutrients as the avocado. It is a particularly good source of healthy unsaturated fatty acids as well as for many vitamins and minerals [1].

After homogenization, the avocado was mixed with sodium sulfate, dried and extracted using the Soxhlet method. The presented application gives reliable and highly repeatable results.

#### 1. Introduction

This Short Note describes the extraction and the determination of fat content in fresh avocado.

#### 2. Experimental

Equipment: Mixer B-400, FatExtractor E-500 Soxhlet

Samples: Avocado, ready-to-eat freshness, purchased in a local supermarket.

Determination: Pieces of fresh avocado flesh were homogenized using the Mixer B-400. See Figure 1.



Fig. 1. Fresh, cutted and homogenized Avocado.

The homogeneous sample was weighed into a cellulose thimble, mixed with sodium sulfate and dried. The extraction was performed using the FatExtractor E-500 SOX, see Figure 2, applying the parameters specified in Table 1.

Table 1: Parameters for the Soxhlet Extraction using FatExtractor E-500

Step	Value	Heating level
Solvent	Petroleum ether	
Extraction	20 cycles	6
Rinse	5 min	6
SmartDrying	on <sup>1</sup>	-
Solvent volume [mL]	120	

The samples were extracted in triplicate. The extracts were dried to a constant weight in a drying oven at 102 °C, cooled down to ambient temperature in a desiccator, weighed and the oil content was calculated.

<sup>1</sup> Instead of using SmartDrying it is possible to use the following drying parameters. Then, SmartDrying is switched off: Petroleum ether: 12 min, heating level 5



Fig. 2 FatExtractor E-500 Soxhlet

#### 3. Results

The determined oil contents of the seed meal samples are in good correlation to the fat content of avocados found in literature [1, 2]. The results are shown in Table 2.

Table 2: Fat content of avocado, determined with FatExtractor E-500 SOX, n = 3.

Avocado	Fat content [%]
Replicate 1	16.12
Replicate 2	16.06
Replicate 3	16.21
<b>Mean value</b>	<b>16.13</b>
Rel. standard deviation (rsd)	0.47 %

#### 4. Conclusion

The determination of the fat content in fresh avocado was determined using the FatExtractor E-500 Soxhlet. The determined value was in accordance to the expected value with low relative standard deviation.

#### 5. References

- [1] Dreher, M.L. and Davenpoort, A. J. 2013. Hass Avocado Composition and Potential Health Effects. Critical review in Food Science and Nutrition, 53:738–750.
- [2] Food data central, data base for nutrient and food composition, U.S. Department of Agriculture <https://fdc.nal.usda.gov/>

For more detailed information and safety considerations please refer to the Application Note No. 402/2020.