

THC Levels in Cannabis Flowers at Mary Jane Berlin 2026 – A Cross-Sectional Analysis of 534 Cannabis Flower Samples Submitted by Expo Visitors



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Introduction

Following the partial legalization of cannabis in Germany, interest in the actual THC content of cannabis flowers has increased considerably. As only limited data are available on real-world consumer samples, the Mary Jane Berlin 2026 Expo provided a unique opportunity to analyze THC levels, as well as complementary CBD levels, in a large number of cannabis flower samples collected from expo visitors under standardized conditions.[1]

Background & Aim of the Study

The determination of tetrahydrocannabinol (THC) and cannabidiol (CBD) levels is an essential component of cannabis quality assessment. During Mary Jane Berlin 2026, cannabis flower samples submitted by expo visitors were analyzed on-site using near-infrared (NIR) spectroscopy [2]. The aim of this cross-sectional study was to determine cannabinoid levels in real-world consumer samples and to evaluate the current potency distribution of cannabis flowers available on the German market.

Methodology – Study Workflow

The NIR method was based on a chemometric prediction model previously validated against chromatographic reference methods [3]. The following workflow was applied to all submitted samples:

- Recording of sample information (strain name, if available)
- Issuing of an access code for online result retrieval
- Photographic documentation of the sample
- Homogenization using a stainless steel grinder
- Transfer of the homogenized sample into an aluminum weighing dish
- Cannabinoid levels were determined as the mean of three NIR measurements
- Manual review and upload of the analytical results to the laboratory server

Throughout the entire analytical process, all samples remained in the possession of the participants and were not retained by the investigators at any time.

Materials

MicroNIR handheld NIR spectrometer (NIRLAB AG, Switzerland)
Chemometric prediction model: Cannabis v26
USB webcam for photographic documentation
Stainless steel grinder, Ø 40 mm (NV Grinders, Austria)
Round aluminum weighing dishes, Ø 57 mm (VWR International)

Fig. 1: NIRLab NIR spectrometer

Fig. 2: Stainless steel grinder



Fig. 3: Sample in weighing dish

Results

A total of 534 cannabis flower samples were submitted for analysis and classified according to their CBD and THC levels:

- 13 CBD-dominant samples (CBD > 1%, THC < 1%): CBD level range: 4.6–16.6%
- 5 CBD–THC hybrid samples (CBD > 1%, THC > 1%): see Fig. 4
- 516 THC-dominant samples (CBD < 1%, THC > 1%): The 516 THC-dominant samples showed a median THC level of 17.4% (range: 5.9–25.7%) and are within the potency range of modern high-THC cannabis flowers currently observed across Europe [4] (see Fig. 5). Strain names were recorded according to the information provided by the participants.

Fig. 4: Cannabinoid levels of CBD–THC hybrid samples

Strain	CBD (%)	THC (%)
Tropicana Cherry	10,6	7,6
Himalaya	5,9	6,3
Apple Strudel	8,2	4
Atlas F1	9,6	9,3
Unknown	6	5,5



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Key Findings

- 534 cannabis flower samples analyzed (516 THC-dominant, 13 CBD-dominant, 5 CBD-THC hybrid samples)
- On-site analysis using NIR spectroscopy
- Sample collection at Mary Jane Berlin 2026
- Median THC level: 17.4%
- THC range: 5.9 – 25.7%

Fig. 5: Distribution of THC levels in THC-dominant samples

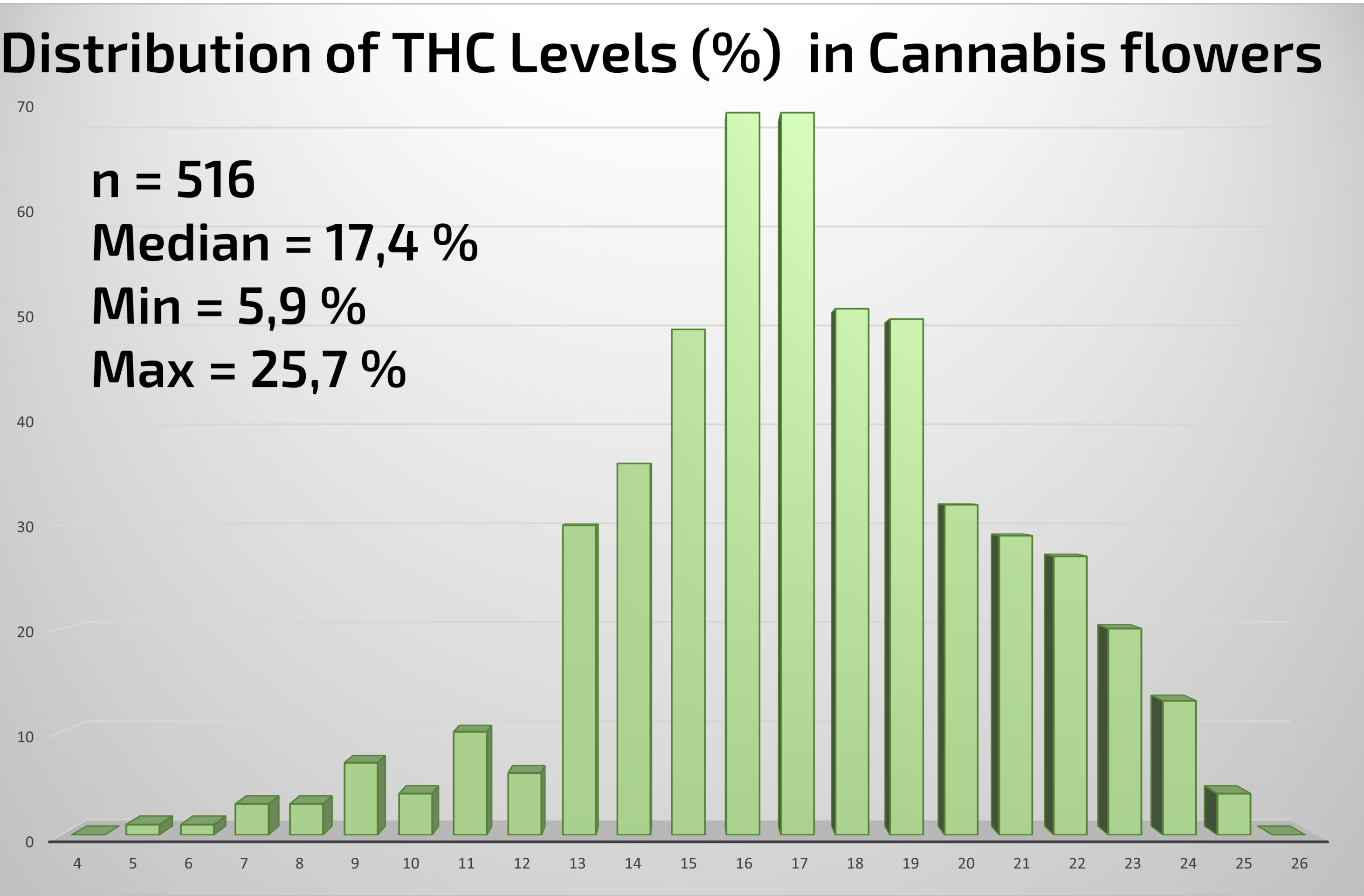


Fig. 6: NIR spectrum of a sample

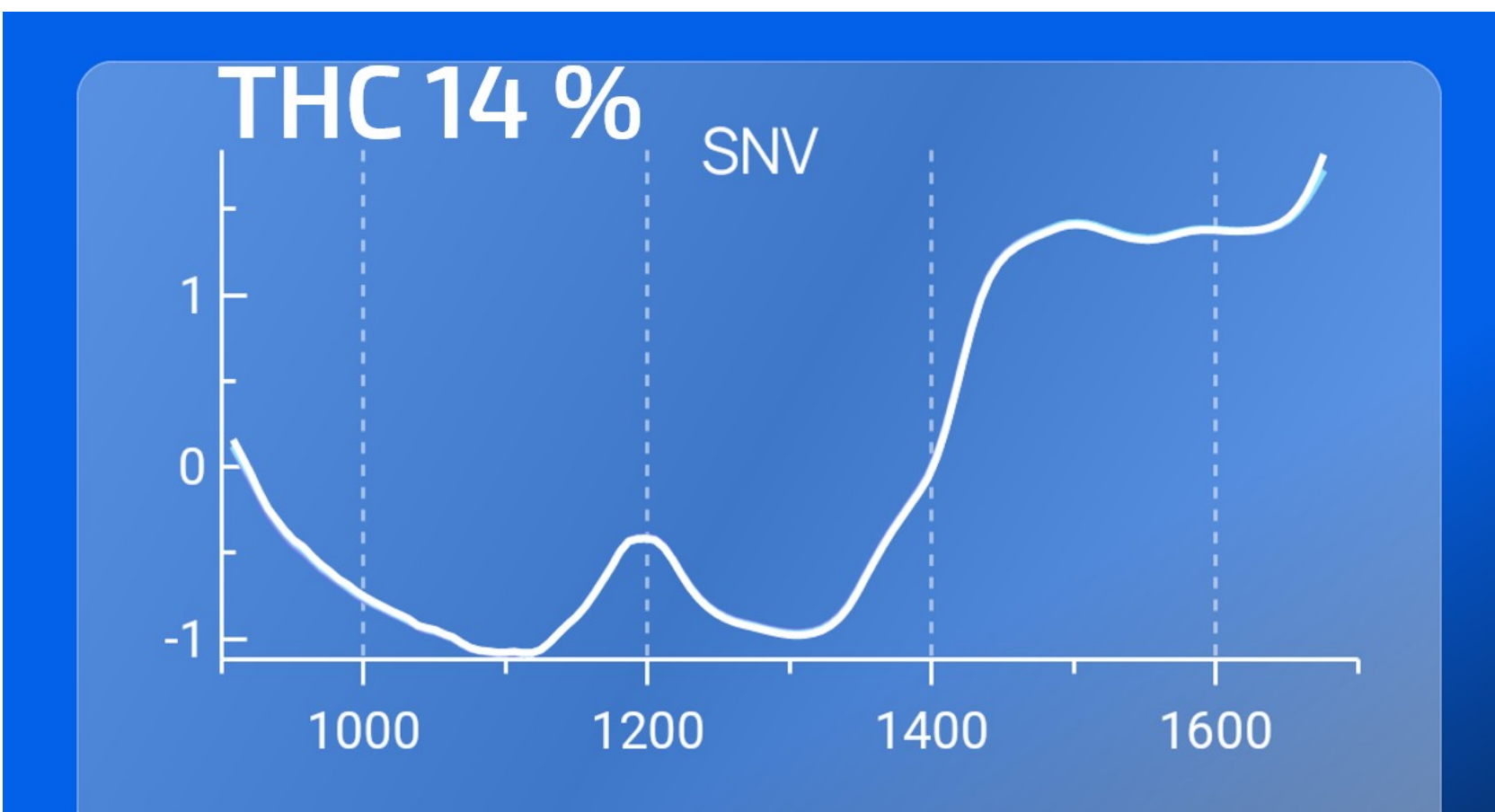
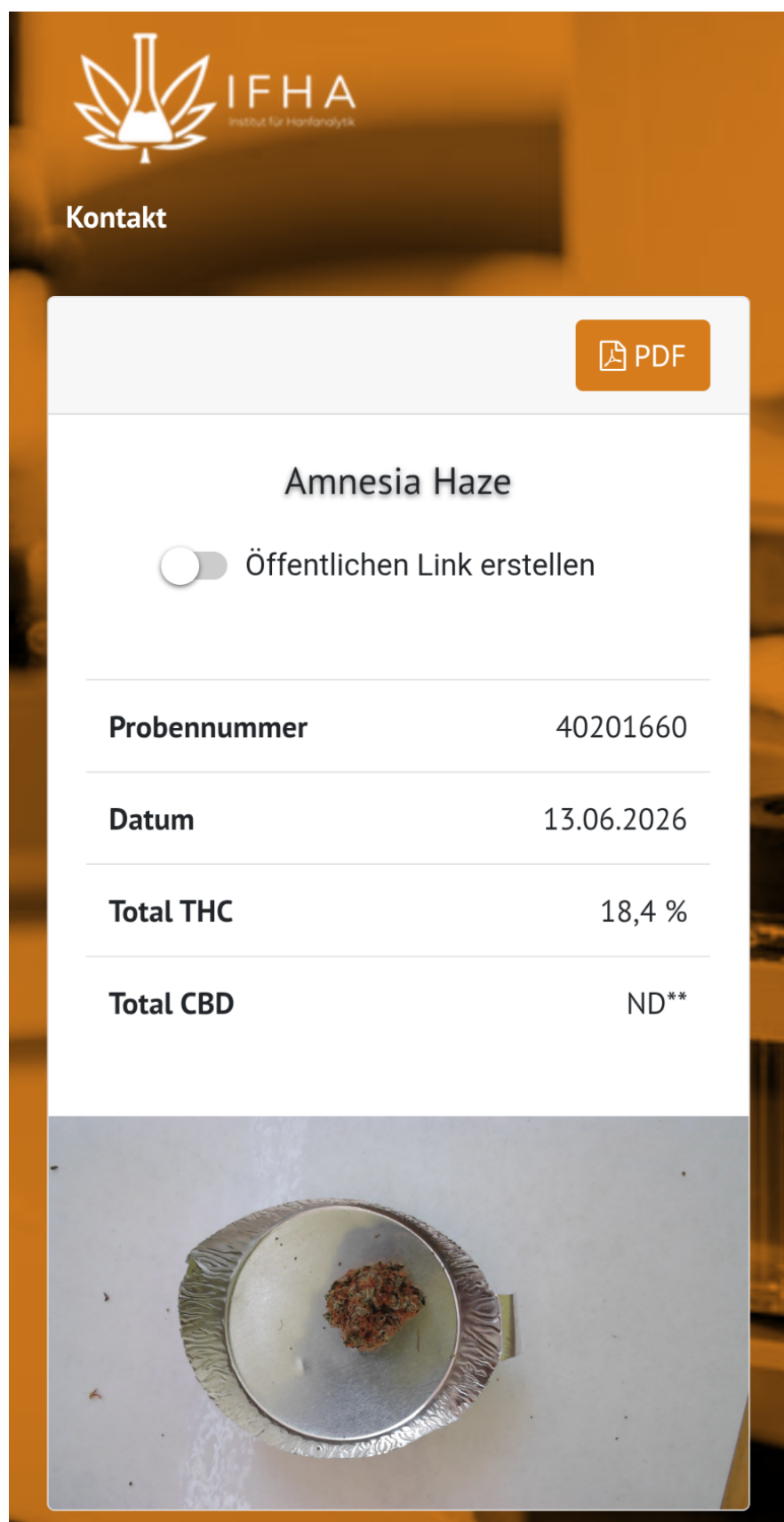


Fig. 7: Example of a participant's online results page



Discussion

The median THC level of 17.4% observed in this study exceeds previously reported European average values (7–13%) and is consistent with the long-term trend toward increasingly potent cannabis flowers in Europe [5,6]. The analyzed samples broadly reflect the potency currently observed in cannabis flowers available on the European market. However, as this was a voluntary cross-sectional survey conducted at a cannabis trade fair, the findings should not be considered representative of the German cannabis market as a whole.

Acknowledgements

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References

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