



# LSD evaluation

## Drug Checking at the Drug Information Center Zurich 2021

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# 1 Introduction

LSD (lysergic acid diethylamide) is a chemically produced derivative of lysergic acid, which occurs naturally in organic compounds of the ergot fungus. It belongs to the group of psychedelics.

In 2021, 100 felts declared as LSD were handed in for analysis at the Drug Information Center (DIZ) in Zurich<sup>1</sup>. During the mobile drug checking operations carried out in the city of Zurich in 2021, 4 felts declared as LSD were handed in and analyzed. The results published here are not representative for the entire substance market in the city of Zurich.

## 1.1 Risk assessment

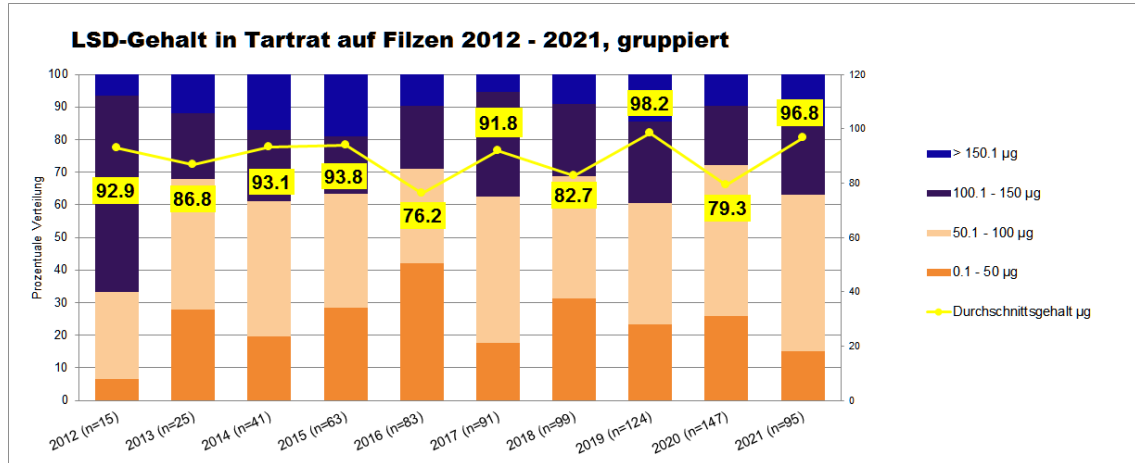
In addition to the dose, the effect of LSD is always strongly dependent on one's state of mind (set) and the environment (setting). There is a risk of ingesting mislabeled substances, pharmacologically active extenders and/or high-dose felts when consuming LSD felts. Highly variable drug content of LSD felts can lead to unintentional ingestion of high doses, which increases the risk of a negative experience (bad trip). High doses increase this risk even for experienced users. Highly intense psychedelic experiences can be induced, which can be disturbing and frightening. In recent years, misdeclared LSD felts (felts containing another psychoactive substance instead of LSD) have been handed out at the DIZ time and again. Such misdeclarations can pose a high health risk, depending on the substance. Information and recommendations for low-risk consumption can be found at [saferparty.ch](https://saferparty.ch) under [LSD Safer Use](#).

## 1.2 LSD content

In 2021, the LSD felts analyzed in the DIZ contained an average of 96.8 µg of LSD. This is 17.5 µg more than in the previous year<sup>2</sup>. The range was from 8.6 µg to 293.8 µg LSD per felt. 63% of the LSD felts contained less than 100 µg LSD of (-9%) and 21% contained between 100 and 150 µg (+3%). In 5 of the LSD felts dispensed, no psychoactive substances were detected or the active substance content was below the measurable value of the analytical methods. A warning was issued for 16% of the LSD-added felts because they contained more than 150 µg of LSD (+6%).

<sup>1</sup> 2021, an additional 121 liquid LSD samples were analyzed. These were not included in the evaluation, as liquid LSD samples are usually declared as a self-mixed product and thus their evaluation is only of limited significance.

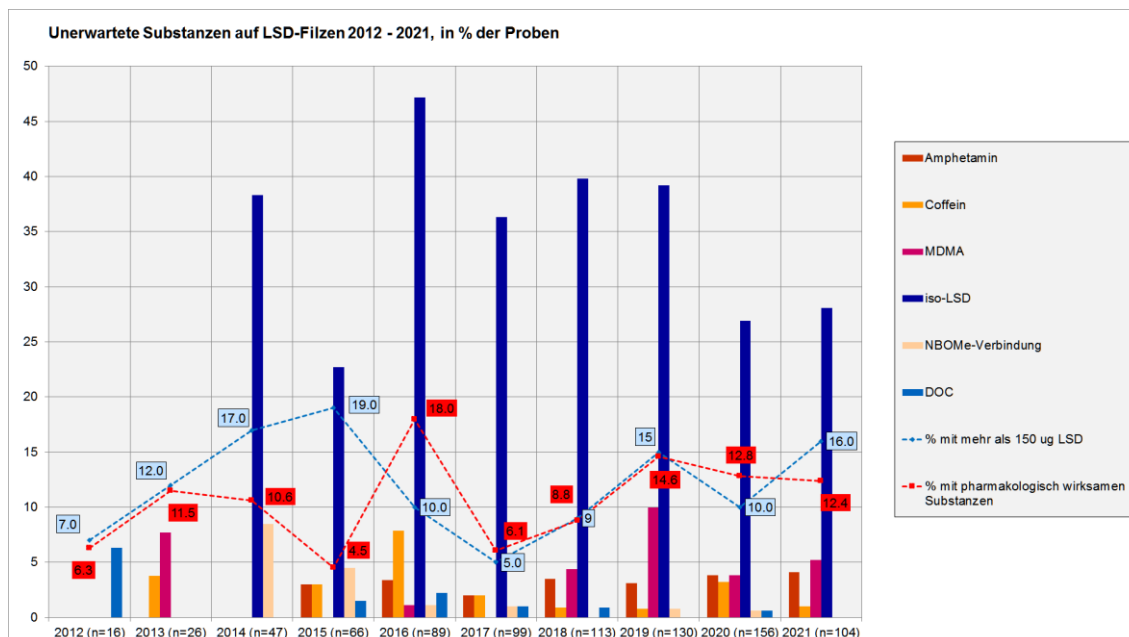
<sup>2</sup> The differences compared with the previous year are shown in brackets below.



Graph 1: LSD content in tartrate on felts 2012 - 2022, grouped (n=783).

### 1.3 Unexpected substances and impurities

In 2021, 12.4 % (-0.4 %) of the felts declared as LSD contained unexpected, potentially pharmacologically active substances. This was due to false declarations or unintentional contamination (smear contamination in minigrips already used with other substances). 2 felts (2% of the samples) were false declarations; of these, both felts contained 1cP-LSD and one sample also contained MDMA, although due to the extremely small amount of MDMA this was probably smear contamination. 2 of the felts declared as LSD contained only cocaine and ketamine, respectively, in a very small amount (less than 100 µg). In 2021, 28.1 % of the analyzed LSD felts also contained the non-psychoactive *iso*-LSD (+1.2 %).



Graph 2: Unexpected pharmacologically active substances on LSD felts 2012-2021, in % of samples (n=104) <sup>3</sup>

For the substances listed here, they are indeed pharmacologically active per se, but they do not necessarily have to be pharmacologically active in the amount detected, as they were sometimes present in too small amounts (e.g. amphetamine, caffeine, MDMA).

The potentially pharmacologically active substances on LSD felts analyzed in 2021 are described below.

### 1.3.1 LSD analogs

In addition to the long known and intensively researched LSD, there are various LSD analogs. These are substances that chemically have a great similarity with LSD and can have comparable effects. Some of them have been known for a long time (e.g. ALD-52, ETH-LAD, AL-LAD, PRO-LAD, etc.) and have been studied pharmacologically as well as psychopharmacologically, at least partially. Others are newer "creations" (e.g. the derivatives 1P-LSD, 1B-LSD, 1cP-LSD etc.), for which only few or no data are available. Certain LSD analogs may (still) be legally produced, traded and consumed in some countries, which is the main reason for their distribution.

Most LSD analogs are naturally different from LSD in their effect and/or potency (e.g. ETH-LAD, AL-LAD, LSZ, etc.). In contrast, the so-called 1-acylated LSD compounds (e.g. 1P-LSD, 1B-LSD, ALD-52, etc.) are presumed, based on pharmacological studies, to convert into LSD in the body (they function as so-called prodrugs) and thus have a comparable psychoactive effect to LSD.

In the case of prodrugs of LSD and LSD analogs, it has not been conclusively clarified whether, in addition to their psychoactive effect, they can produce other pharmacological effects. How potent these prodrugs are compared to the resulting substance (e.g., 1P-LSD to LSD), and to what extent a delay in onset of action occurs in each case, may be substance-dependent and cannot be generalized. Thus, it is important to approach the dose/effect carefully to avoid overdoses.

**In 2021, a total of two (2.1%) felts declared as LSD were unexpectedly analyzed for the LSD analog 1cP-LSD.**

### 1.3.2 *iso-LSD*

The non-psychoactive *iso-LSD* is produced during the manufacture of LSD and/or during prolonged storage under non-destructive conditions (exclusion of light and oxygen); in each case by so-called isomerization. Some users report that *iso-LSD* inhibits and/or otherwise affects the effects of LSD. However, there is no scientific evidence to support

<sup>3</sup> The difference in the number of samples between graph 1 and graph 2 (n=95 and n=104) is due to the fact that in graph 1, those felts declared as LSD which did not contain LSD (e.g. false declarations) were not included in the evaluation. In graph 2, all felts declared as LSD were included in the evaluation.

this hypothesis. Whether *iso-LSD* can produce non-psychoactive but otherwise pharmacologically relevant effects has not been conclusively determined. Especially in higher doses, pharmacologically significant effects are conceivable.

**In 2021, *iso-LSD* was analyzed in 28.1% of the LSD felts analyzed (+1.2%); on average, LSD felts contained 28.6 µg (+22.4 µg) of *iso-LSD*.**

### **1.3.3 Other substances**

In addition to the substances described above, small amounts of **amphetamine, MDMA, DMT, cocaine, ketamine and caffeine** were analyzed on individual LSD felts. Since only small, hardly or not effective doses of these substances can be applied to LSD felts, risky interactions are very unlikely. It is assumed that it is mostly a matter of smear contamination (in minigrips already used with other substances) and that these substances were applied to the LSD felts unintentionally, and thus not as extenders.

## 2 Conclusion

- About three quarters of the LSD felts analyzed by DIZ contain between 50.1 µg and 150 µg of LSD, with a very wide range. Especially the few samples containing an extremely high amount of LSD show how important it is to test felts after purchase.
- A large proportion of the LSD felts dispensed at the DIZ are declared to contain extremely much higher doses than are effective. The analyses in 2021 again showed that LSD felts in almost all cases contain a maximum of half of the expected active ingredient content.
- In DIZ Zurich, about half of the LSD felts dispensed in 2021 were obtained directly by users via online supply channels such as Telegram or the darknet. This is in stark contrast to the usual, conventional supply channels (e.g. private individuals, parties, etc.) of other tested substances such as cocaine and amphetamine.
- The number of LSD felts containing unexpected substances remains low compared to the number of samples in 2021. A more recent phenomenon, however, is the unwitting purchase of LSD analogs. It can be assumed that LSD analogs are sold as LSD for profit maximization due to their largely legal status in the EU and the low purchase price. What remains unchanged *is* the high proportion of detected *iso-LSD*, which is not psychoactive but is unexplored and thus may be associated with unknown side effects.

