



Instructions for the clinical application of urine marker capsules

In addition to the tried and tested liquid Ruma® markers we are now also offering Ruma® marker capsules.

The advantages of the new administration form at a glance:

- preparation of a beverage no longer required
- no more adding of sugar
- efficient oral cavity check due to blue dye
- neutral in taste
- intake even possible at home using the app Ruma® Digital-System
- markers and a wide range of illicit substances are measured at the same time in one compact LCMS/MS analysis
- no additional confirmation analyses required

The Ruma Marker Box

Each Ruma Marker Box contains a marker capsule individually packaged in a small dish or bottle as well as a chewy candy used in the oral cavity check. Located on the dish/bottle is an individual barcode that identifies the assigned marker. An interlocking system of security features yields the precise identification of the marker code during lab analysis.





Below please find instructions on the use of the marker system. The advantage of marking the urine is that swapping of samples can be detected through analysis without supervising the urine collection itself.

Currently, 6 different marker substances are available. Refrigeration is not required. Should your patient need to go to the bathroom upon arrival, let them empty their bladder before marker intake.

Afterwards, proceed as follows:

- 1.**



First, please fill in the laboratory requisition slip, e. g. name, date of birth and gender. Please indicate on the requisition slip if and which drugs of abuse are supposed to be determined.
- 2.**



Two identical stickers containing an alphanumeric code are located one each on the outer and inner packaging of each marker. This code identifies the marker based on a database stored with the certified manufacturer. The barcode sticker on the outer packaging is intended for the laboratory requisition slip. The sticker on the marker dish/bottle is intended for your documentation.
- 3.**



Take the marker capsule out of the packaging and give the capsule to the patient.



4.

Remove all items from your field of vision that may cover or impede the actions of the patient.
Make sure that the patient's forearms are uncovered



5.



and that the patient collects the capsule using only their forefinger and thumb.
Keep your eyes on the marker capsule at all times.

6.

Now direct your patient to place the capsule on their tongue while you are watching on.



7.



Let the patient show you the capsule positioned on their tongue before the patient swallows it with approx. 100 ml of water.



8.

Immediately after swallowing the marker capsule the patient takes the provided chewy candy



9.



... and chews it thoroughly on both sides in order to prevent the capsule from remaining in the mouth, e. g. in the cheek pouch.

10.

The marker capsule releases a blue food dye if it is kept in the mouth for too long or is damaged by the chewing process.



11.

The patient needs to wait at least 1 hour after marker intake before they can provide their urine sample without supervision. During that time, it is not necessary to monitor the patient. However, let the patient know that they may not drink during this time. The patient may wait longer to provide the sample, even hours. Please bear in mind, however, that the laboratory needs the first urine after marker intake

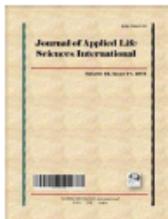
12.

The urine is then filled into the corresponding urine tubes. Please use only the provided medical transport bags (UN 3373) to ship samples for forensic purposes which cannot be reopened without damage after they have been properly sealed.

13.

After processing you will receive the result of the marker substance, the creatinine value, results regarding manipulation e.g. addition of oxidants, acids, lyes etc. and, if applicable, the results of drugs of abuse analysis. Please note that all substances that might alter results are reliably detected during manipulation testing in the lab.

Please refer to www.marker-test.de/en for additional information



Adulteration of Urine Samples, Discovery and Mitigation

B. Huppertz¹, C. Bartling¹ and K. Baum^{2*}

The Ruma Marker-System detects manipulation agents

The influence of manipulation agents on the analysis of urine samples was the subject of intense scientific scrutiny. The study investigated manipulants that are supposed to yield a false-negative result as well as such agents that aim at interfering with the analysis itself.

Excerpt from the publication:

"Conclusion:

***This study shows that there are just a few manipulants showing a significant influence on the GCMS result and they all can be detected by the selected tests on manipulants.*"**

For additional information please refer to
Adulteration of Urine Samples, Discovery and Mitigation
Huppertz, B., Bartling, C., Baum, K.
Journal of Applied Life Sciences International,
16(4):1-8, 2018