



**BETTER BASICS**  
LABORBEDARF

INFORMATION ABOUT

30% EFFICIENCY IMPROVEMENT BY

IN PHARMACEUTICAL QUALITY CONTROL

30% EFFICIENCY IMPROVEMENT

BY IMPLEMENTING SMARTRACK®

IN PHARMACEUTICAL QUALITY CONTROL

This study aimed to evaluate the impact of implementing the SmartRack® laboratory organisation system on extracting active pharmaceutical ingredients. The objective was to verify a 30% efficiency improvement with the use of SmartRack® in three experimental phases: preparation, execution and breakdown.





Two shaking funnels are used in one SmartRack® classic

### Abstract

*This study aimed to evaluate the impact of implementing the SmartRack® laboratory organisation system on extracting active pharmaceutical ingredients. The objective was to verify a 30% efficiency improvement with the use of SmartRack® in three experimental phases: preparation, execution and breakdown.*

### Systematic modelling of the extraction of active pharmaceutical ingredients

Quality control in pharmacy is essential to ensure that pharmaceutical products meet the highest standards. It guarantees the efficacy, safety and purity of medicines to protect the health and well-being of patients. Rigorous quality assurance measures ensure that pharmaceutical products are consistent and reliable. These measures include analysis of the quality and quantity of active ingredients in the final product.

With the increasing complexity and diversity of products, the quality control requirements for already high standard laboratories and personnel are becoming more complex. This is particularly true for highly specialised products. In order to achieve comprehensive test coverage with efficient resource management, the SmartRack® organisational system was investigated for its efficiency-enhancing properties.

### Methodology

The quantification of active ingredients, in particular the sample preparation of a standard powder tablet, was demonstrated as an example. The experimental procedure was compared with and without the implementation of SmartRack®. The sample was crushed, ground and the fillers were extracted by shaking for separation. The focus of the comparison was on the efficiency improvement and standardisation of the experiments through the use of the SmartRack® laboratory organisation system.



An Erlenmeyer flask is filled from a shake funnel. The shaking funnel hangs in a SmartRack® classic



An Erlenmeyer flask is filled with a spray bottle in front of a SmartRack® classic.

### Comparison of procedures with and without SmartRack®

The grinding and distribution of powder tablets into tubes for multiple determinations was much more efficient and comprehensive with pre-sorted and securely stored tubes in SmartRack® directly at the workstation. In addition, the solvent for the slurry was available on site. Rapid filtration benefited from the immediate availability of filters and water at the workstation. The risk of accidents and errors during phase separation was minimised by secure holders for separation funnels and the organisation of glassware in the rack. The ergonomic benefits and improved clarity provided by SmartRack® facilitated pipetting into well plates. This encouraged time-optimised, consistent execution of the experiment.

The lack of storage for samples, equipment and materials resulted in additional walking and searching. There was no set order for the work materials, and the result was a prolonged turnaround time due to non-standardised procedures. Manually setting up the separating funnel stands took more time than selecting the appropriate module and clicking it into the SmartRack®. Workspace occupation was significantly higher due to the traditional setup. This made it difficult to perform or prepare for subsequent experiments. Errors or contamination were facilitated by a lack of overview.

### Conclusion

*The SmartRack® system significantly improves the organisation and efficiency of sample preparation for drug assays in pharmaceutical quality control. By optimising the workspace and reducing sources of error, SmartRack® supports precise and reliable execution of pharmaceutical experiments. The comparative experiment with SmartRack® suggests that efficiency can be increased by 30%. The results underline the importance of innovative organisational systems to improve the quality of pharmaceutical experiments.*



Filtration in a round bottom flask in a SmartRack® classic



Photo: Building of the Better Basics Laborbedarf GmbH in Dresden



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### Dr. rer. nat. Marcus Heinze

Marcus Heinze was born in Zittau and is now a partner and Head of Development at Better Basics Laborbedarf GmbH. He completed his studies in polymer chemistry at the TU Dresden with a doctorate in the field of mineralisable hydrogels. Today he is responsible for development at Better Basics Laborbedarf. The area of product development is dedicated to multidimensionally optimised component design, which combines the possibilities of various 3D printing processes with those of classic metal processing.

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### Are you interested in our products or have any further questions?

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### Our request to you

A product like our SmartRack® is only as good as its users. With our roots in the Leibniz Institute for Polymer Research Dresden, our company Better Basics Laborbedarf stands for the tradition of "Made in Germany" quality. We feel in multiple aspects committed to this quality label for German companies, which stands for high innovative strength. Even beyond our product catalog, the same applies for us at Better Basics: Just contact us if you have ideas for extensions or improvements or if you notice something in your daily laboratory routine that we should optimize right away.

We want to create the best possible working environment for you in the laboratory and we are grateful for any comments and inspiration. We can jointly shape the future of laboratory work by cooperating with scientists and researchers. Just like you, we're always looking for a way to make our world a little better every day.

### Impress:

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