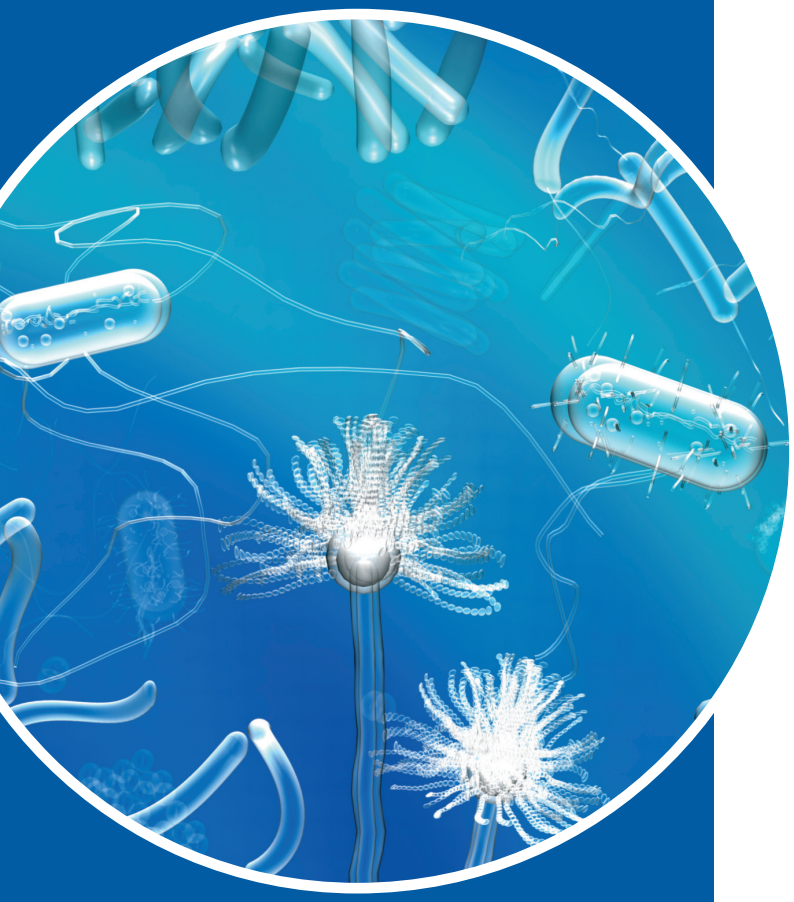
R-Biopharm AG



Easy & Fast

RIDA®CHECK

Art. No. R1091 - 100 Tests
Art. No. R1092 - 40 Tests

Indicator swabs for detection of protein residues in cleansing and hygiene control

- **Easy**
  - Open package
  - Take sample
  - Read result
- **Fast**
  Result within a few seconds
- **ATP-independent**
  Swab shows presence of proteins by colour change
- **Sensitive**
  Limit of detection at 20 µg protein

06/2009

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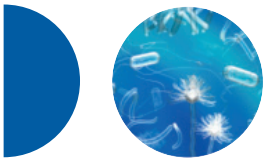


RIDA®CHECK

Art. No. R1091, R1092

R-Biopharm Contact:

- **International Sales:**

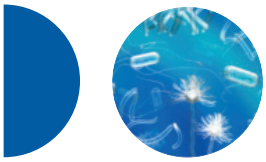
  Phone: +49 (0) 61 51 - 81 02-0
  E-mail: sales@r-biopharm.de

- **National Sales:**

  Phone: +49 (0) 61 51 - 81 02-0
  E-mail: info@r-biopharm.de

- **Orders:**

  E-mail: orders@r-biopharm.de
  Fax: +49 (0) 61 51 - 81 01-20



RIDA®CHECK

Art. No. R1091, R1092

Advantages of RIDA®CHECK protein indicators

- **Easy**
  Open package – apply – read
- **Fast**
  Results in seconds
- **Ready-to-use**
  No preparation of reagents, no laboratory equipment
- **Unambiguous**
  Green colouration of the swab = protein detected
- **Efficient**
  Low cost alternative to ATP measurement

Fig. 1: Test Kit RIDA®CHECK

RIDA®CHECK

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Intended Use

RIDA®CHECK is a rapid swab test for monitoring the efficiency of surface cleaning procedures in the production environment. The test is intended to be used as a support for hygiene monitoring as well as general protein screening in allergen management.

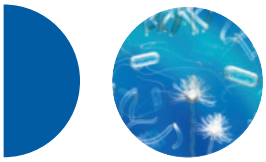
General

Within the scope of a reasonable HACCP concept it is not sufficient to only carry out microbiological status. This control would only monitor the success of sanitation steps within the hygiene program of the food factory. Residues of foods left remaining on surfaces may additionally provide the ideal nutrient base for airborne microbes which can re-contaminate disinfected surfaces.
Hence, an efficient cleaning of surfaces and equipment is needed and therefore it is expedient to regularly monitor the effectiveness of these procedures.

Test Principle

During production processes protein residues from raw materials or food stuffs may remain on surfaces. These should be removed during the normal cleaning process. However cleaning actions are not always successful and consequently contamination may still remain and possibly lead to the cause of future health issues.

RIDA®CHECK's methodology is based on the detection of protein residues and is independent of ATP. During the assay the swabbed protein residues react with the colour indicator. This interaction induces a pH decrease which leads to a rapid colorimetric reaction from yellow through to green. According to the intensity of the colour change (yellow → light green → green → dark green) the guideline determination of the contamination level is possible. The operator then determines whether the level of contamination in the tested area is still acceptable (according to routinely observed and recorded colour levels) to decide if corrective action has to be initiated.



RIDA®CHECK

Art. No. R1091, R1092

Flowchart of Performance and Colour Scale for Evaluation

1. 
   Rip the packaging of the swab at its perforation

2. 
   Hold the swab on one side with one hand and remove the other side of the packaging with the other hand

3. 
   Firmly wipe the surface with the unpackaged part of the RIDA®CHECK indicator (Test 1)

4. 
   Return the used part of the swab into its packaging

5. 
   Remove the packaging of the second indicator and firmly wipe the surface of another sampling area (Test 2)

Between the performance of test 1 and 2 a maximum time frame of 1 hour should not be exceeded. The alcohol contained in the reaction liquid is volatile and will evaporate over time after opening the package. A completely dry swab is unusable for accurate testing.

The size of the sampling area should equal to approximately 20 cm^2 (4.5 cm x 4.5 cm).
The time to develop the colour reaction depends on the level of contamination of protein residues on the sampled surface. In cases of high contamination the colour change will be visible after only a few seconds. In case of low contamination the time for the colour change to occur could be extended up to 2 minutes. Colorimetric reactions which occur later must be disregarded.

Colour Scale

Colour	Contamination Value
	Clean
	Borderline
	Lightly contaminated
	Highly contaminated

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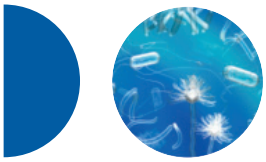

RIDA®CHECK

Art. No. R1091, R1092

Intensity of colour change – evaluation with protein standards

Introduction

RIDA®CHECK Indicator Swabs are able to detect protein residues of various compositions according to the different protein fractions of foods. For the determination of thresholds of protein values which could either lead to low or high intensity of the colorimetric reaction an evaluation with protein standards was performed. The substance for preparation of the different protein standards was bovine serum albumin (BSA).

Material and Methods

The standard solutions were prepared with BSA following the scheme below: 200 mg BSA (BSA Fraction V; PAA Laboratories GmbH, Pasching, Austria) were shaken with 40 ml deionised H_2O for 30 min until the protein fraction was solved. The solutions were filled up to a final volume of 50 ml. The final concentration of the BSA stock solution was 4.0 g/l. Starting with this stock a dilution series with 4.0 g/l (undiluted), 2.0 g/l, 1.0 g/l and 0.5 g/l was built repeating 1:2 dilutions (1 ml of higher concentration + 1 ml H_2O). Pure deionised water (0.0 g/l protein) was used as negative control.

To perform the evaluation 50 µl of each of the different protein solutions were used. The amounts of protein which were tested have been 0.0 µg, 25 µg, 50 µg, 100 µg and 200 µg accordingly.

Evaluation with solved protein

The solutions were pipetted directly onto the RIDA®CHECK indicators, immediately after unpacking. Subsequently the indicators were placed back into the pouches. The intensity of the colorimetric reaction was documented photographically.

Evaluation with dried protein (surface test)

The solutions were pipetted onto a clean surface and evenly spread in a square size of 3 x 3 cm. After the solution has become touch-dry the sampling areas were swabbed thoroughly with a fresh unpacked RIDA®CHECK indicator each. For a better representing of the colorimetric reaction the indicators were left unpacked for taking the picture (which is contrary to the advice written in the product leaflet).

RIDA®CHECK

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Results

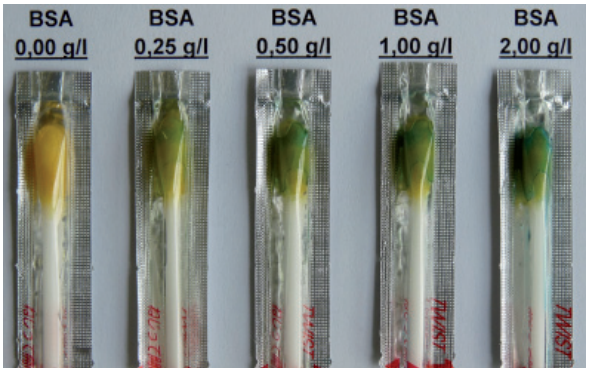


Fig. 2: Colorimetric reaction of RIDA®CHECK indicator swabs after application of protein standard solutions

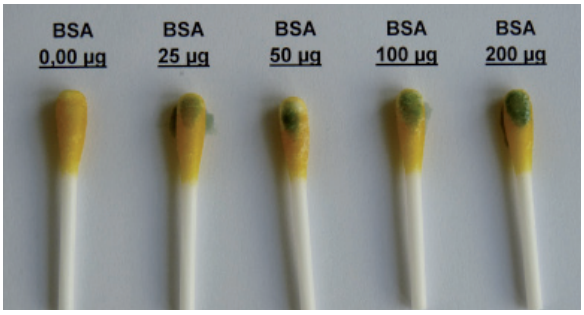
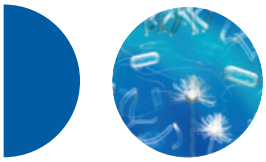


Fig. 3: Colorimetric reaction of RIDA®CHECK indicator swabs after wiping the sampling areas which had been contaminated with the protein standard solutions

Conclusion

The results gained from the evaluation with BSA protein standards clearly demonstrate that the RIDA®CHECK indicators can be used effectively as a guideline indicator to determine the relative degree of protein contamination on any surface. Due to the variety of natural protein fractions deriving from foods the final intensity of the colour development of the swabs (positively indicating protein detection) may differ slightly case by case from the colouration exhibited with the BSA standards.
Each food producer should perform an internal validation study to determine the individual colorimetric reaction of RIDA®CHECK in his production environment.



RIDA®CHECK

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Possible Indicator Reactions/More Possibilities for Detections

RIDA®CHECK Indicator Swabs start to react if protein fractions are present on the surfaces while wiping them. Substances such as ATP or NADH will not be detected.

Other components of foods (polysaccharides, monosaccharides, lipids a. o.) will not be detected by the test. A high content of fats within the residues on the surfaces may influent the colorimetric reaction of the indicator.

With the RIDA®CHECK Indicator Swab proteins from micro-organisms will be detected also. In comparison to protein residues from foods the amounts of micro-organism proteins are rather low even if the contamination level is high. Therefore the colorimetric reaction of the RIDA®CHECK Indicator Swabs could not be correlated to the amount of bacteria or fungi which may have survived on the sampled surfaces.

It is possible that the RIDA®CHECK Indicator Swab also detects residues of disinfectants on the surfaces. This effect will especially occur if the chemical structure of the disinfectants is comparable to the structure of protein chains (e.g. chlorhexidingluconate) as well as high concentrated detergents.
The intensity of the colorimetric reaction depends on the kind of disinfectant and the amount in which it occurs. For further information about the detection of disinfectants with RIDA®CHECK indicators please contact R-Biopharm.