Instructions for use
InviMag® Food Kit

INVITEK diagnostics

InviMag®

Language: EN

REF 7436300250

Σ 5 x 96 preparations

ALS Life Sciences Portugal, S.A.
Zona Industrial de Tondela, ZIM II,
Lote 6, 3460-070 Tondela
Portugal

Important notes

Thank you for purchasing the **InviMag® Food Kit** from Invitek Diagnostics.

The product serves the purpose of semi-automated isolation of DNA from a wide range of food species of plant and animal origin (fresh, frozen, or dried material from e.g. processed or unprocessed food containing meat, leaves, roots, fruits, or seeds), using magnetic beads technology.

It can be used on all kinds of magnetic bead-based instruments. Run protocols are provided for the KingFisher™ Flex, KingFisher™ Duo, Auto-Pure 96, and Auto-Pure Mini instruments.

WARNING! Improper handling and use for other than the intended purpose can cause danger and damage. Therefore, we ask you to read these instructions for use and follow them carefully. Always keep them handy. To avoid personal injury, also observe the safety instructions.

All versions of the instructions for use can be found on our website for download or can be requested from us: www.invitek.com

Contact:

Technical support:

techsupport@invitek.com

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1. Safety instructions

Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- When and while working with chemicals, always wear protective clothing, disposable gloves, and safety glasses.
- Always change pipette tips between liquid transfers. To avoid cross-contamination, we recommend the use of aerosol-barrier pipette tips.
- Do not reuse any consumables.
- Discard gloves if they become contaminated.
- Do not combine components of different kits unless the lot numbers are identical.
- Avoid microbial contamination of the kit reagents.
- To minimize the risk of infections from potentially infectious material, we recommend working under laminar airflow until the samples are lysed.

Before handling chemicals read and understand all applicable safety data sheets (MSDS). These are available online at www.invitek.com.

Dispose kit residues and waste fluids in accordance with your country's regulations, again refer to the MSDS. Invitek Diagnostics has not evaluated the liquid waste generated by the kit for residual infectious materials. Contamination of the liquid waste with residual infectious materials is highly unlikely but cannot be excluded completely. Therefore, liquid waste must be considered infectious and must be handled and disposed of according to local safety regulations.

European Community risk and safety phrases for the components of the **InviMag® Food Kit** to which they apply are listed below as follows:

Binding Buffer GT


Warning

Contains: Guanidinium chloride
Hazard statements
H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
Precautionary statements
P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Proteinase K

Danger

Hazard statements
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
Precautionary statements
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P284 - Wear respiratory protection.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Wash Buffer HL

Warning

Contains: Guanidinium chloride
Hazard statements
H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
Precautionary statements
P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor if you feel unwell.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P330 - Rinse mouth.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Emergency medical information can be obtained 24 hours a day from infotrac, www.infotrac.net:

outside of USA: **1 – 352 – 323 – 3500**
in USA: **1 – 800 – 535 – 5053**

2. Product information

2.1 Kit contents

InviMag® Food Kit

	5 x 96 purifications
Catalogue No.	7436300250
Lysis Buffer EM	500 ml/bottle
Binding Buffer GT	400 ml/bottle
Proteinase K	10 vials for 1.1 ml working solution
RNase Free Water	15 ml/bottle
Wash Buffer HL	225 ml/bottle (final volume 450 ml)
Elution Buffer M	125 ml/bottle
MAP Solution D	10.5 ml/bottle
2.0 ml Safe-Lock Tubes	250 pieces
Short Protocol	1 leaflet

InviSorb® Spin Food Kit Add-On

	Content
Catalogue No.	1036020200
Lysis Buffer EM	2 x 60 ml/bottle
Proteinase K	2 vials for 2 x 1.1 ml working solution

2.2 Reagents and equipment to be supplied by the user

Lab equipment:

- Instrument suitable for magnetic bead-based nucleic acid extraction and corresponding plasticware
- Microcentrifuge
- Thermo mixer (65°C)
- Measuring cylinder (500 ml)
- Disposable gloves
- Pipette and pipette tips (filter tips are recommended)
- Vortex mixer
- Reaction tubes (1.5 ml, 2.0 ml)

Liquids and solvents:

- 96 - 100 % ethanol (non-denatured)
- 80% ethanol
- Optional: RNase A (10 mg/ml)

2.3 Storage, appearance, and shelf life

Shelf life: All buffers and kit components should be stored at room temperature and have a shelf life as indicated on the outer kit package label.

After opening, individual components of the kit, as well as components prepared accordingly before first use, have a shelf life of 3 months.

Before each use, make sure that all components are at room temperature. If there are temperature-related precipitates in the solutions, dissolve them by carefully warming (up to 30°C).

Room temperature (RT) is defined as a range from 15 - 30°C.

Wash Buffer HL: after adding ethanol, it should be firmly closed and stored at room temperature.

Proteinase K: once dissolved in DNase/RNase free water Proteinase K can be stored at 2 - 8°C for up to two months. For longer storage keep at –20 °C, freeze-thaw once only.

2.4 Intended use

The **InviMag® Food Kit** is a magnetic bead based nucleic acid extraction kit, intended for the semi-automated isolation and purification of genomic DNA. Besides the isolation of genomic DNA from food material, DNA from pathogens such as bacteria may also be co-purified.

The kit can be used for a wide range of food matrices of plant and animal origin (fresh, frozen, or dried material from e.g., processed, or unprocessed food containing meat, leaves, roots, fruits, or seeds).
The product is intended for use by professionals only, such as laboratory technicians, physicians and biologists trained in molecular biological techniques and in vitro diagnostic procedures.

2.5 Product information and specifications

Starting material	Yield	Quality	Time
Up to 200 mg food sample	Up to 50 µg (depending on sample type and volume)	A_{260} : A_{280} 1.6 – 2.2	Approx. 40 min (excl. lysis)

Yield and quality of purified nucleic acids depend on the sample type, sample source, transport, storage, and age. In addition, yield, and quality of isolated DNA from food samples depend on the type of food and especially on the degree of processing. Heavy processing of the food can cause degradation of nucleic acids. Therefore, a lower DNA yield and fragmented DNA can be expected in this case.

If needed, more than 200 mg sample can be processed by linear upscaling of the lysis components. Additional Lysis Buffer EM and Proteinase K can be ordered separately (**InviSorb® Spin Food Kit Add-On**, catalogue no 1036020200).

The kit uses gentle chemicals for the isolation of intact, highly pure DNA. The kit allows DNA purification without the use of phenol/chloroform.

Downstream Applications:
Yield and quality of isolated nucleic acids are in general suitable for plenty of molecular applications such as PCR techniques, NGS and other amplification techniques. Downstream applications should be performed according to the respective manufacturer’s specifications.

2.6 Principle and procedure

1. Lyse samples

Before lysis, samples must be homogenized. Mortars, mills, or other commercial homogenizers (PowerLyzer, Bullet Blender etc.) can be used for homogenization. Samples are lysed at elevated temperature. Lysis is performed with Lysis Buffer EM and Proteinase K. After sample lysis residues of food material are removed by centrifugation.

2. Bind DNA

After sample lysis and centrifugation, the cleared lysate is transferred to the binding plate/cavity prefilled with Binding Buffer GT, ethanol, and MAP Solution D. DNA binds specifically to the magnetic beads (MAP Solution D).

3. Wash to remove residual contaminations

Contaminants are efficiently washed away using Wash Buffer HL and 80% ethanol, while the genomic DNA remains bound to the magnetic beads.

4. Elute DNA

DNA is eluted from the magnetic beads using 100 µl of prewarmed Elution Buffer M.

3. Nucleic acid extraction with the InviMag® Food Kit

3.1 Before starting a protocol

When using the kit for the first time make sure all buffers and reagents are prepared as indicated:

Buffer and reagent preparations prior first use: 5 x 96 preparations
Wash Buffer HL: Add 225 ml of **96 - 100% ethanol** to the bottle. Mix thoroughly, always keep the bottle firmly closed. **Proteinase K:** Add 1.1 ml of **RNase Free Water**. Mix thoroughly by vortexing for 10 sec.

- **Binding Buffer GT:** When processing many samples, a master mix of Binding Buffer GT and 96 - 100% ethanol can be prepared. For this purpose, Binding Buffer GT is mixed 1:1 with 96 - 100 % ethanol. 650 µl of Binding Buffer GT and 650 µl ethanol are required per sample.
- **Prepare 80% ethanol** (800 µl per sample is required)
- Adjust the thermo mixer to 65°C.

3.2 Sampling and storage of starting material

For reproducible and high yields, the correct sample storage is essential. Yields may vary depending on factors such as sample age, sample type, transport, storage, and degree of the food processing.

Repeated freeze-thaw cycles of samples should be avoided to prevent nucleic acid degradation. In general, best results are obtained using fresh samples.

Food material: samples of food origin can be stored at room temperature for 2 - 3 hours, for short-time storage (up to one week) samples may be stored at 2 - 8 °C. For long-term storage, freezing samples at –20°C or –80°C is recommended.

Dried sample material should be stored protected against humidity, sunlight, and temperatures above 30°C.

3.3 Preparation of starting materials

In the following the preparation of the sample material is described.

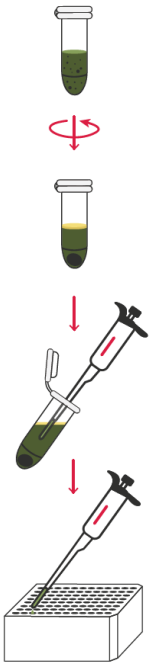
For the extraction of DNA from food samples, it is important to perform a good homogenization to break up present structures and ensure that trace materials are evenly distributed. Mortars, mills, or other commercial homogenizers (PowerLyzer, Bullet Blender etc.) can be used for homogenization.

Homogenize a representative amount of sample and transfer up to 200 mg of homogenate into a 2.0 ml Safe-Lock Tube, to proceed with the lysis.

3.4 Short protocol InviMag® Food Kit

All types of magnetic bead instruments are supported. Instrument specific run protocols are provided in the appendix of this manual and on our homepage www.invitek.com.

Sample Lysis:



1. Transfer up to 200 mg of homogenized starting material into a 2.0 ml Safe-Lock Tube (provided). For higher amount of starting material see section 3.5.
2. Add 650 µl **Lysis Buffer EM** for non-dry material or 850 µl for dry material. Add 20 µl **Proteinase K**, vortex thoroughly for 15 sec.
3. Incubate the reaction mix at 65°C for 30 min (or longer) while vigorously shaking.

   Optional: *To remove RNA from the sample, add 20 µl RNase A (10 mg/mL) per 200 mg of sample, vortex shortly and incubate for additional 30 min at room temperature.*

   Note: *During incubation prepare plates/cavities as described below.*
4. After incubation centrifuge at > 10,000 x g for 10 min to pelletize food residues.
5. Carefully transfer 250 µl of the supernatant into the binding plate or binding cavity.

   Note: *Do not disturb the pellet! Avoid transferring the oily phase at the top of the tube (see figure left).*

Preparation of Plates or Cavities:

Prepare plates or cavities as described below. Values refer to the amounts required for 1 sample.

Note: *Plates are not provided and must be chosen acc. to the magnetic bead instrument manufacturer's instructions.*

Note: *Mix **MAP Solution D** vigorously before use by vortexing!*

Binding:	Add 300 µl **Binding Buffer GT** + 300 µl **96 - 100% ethanol** + 20 µl **MAP Solution D**.
Wash 1:	Add 350 µl **Binding Buffer GT** + 350 µl **96 - 100% ethanol**.
Wash 2:	Add 800 µl **Wash Buffer HL**.
Wash 3:	Add 800 µl **80% ethanol**.
Elution:	Add 100 µl **Elution Buffer M**.

Loading and starting the Magnetic Bead Instrument:

6. Load prepared plate(s) into the magnetic bead instrument according to the manufacturer's instructions.
7. Start the instrument specific run protocol.

   Note: *Instrument specific run protocols are provided in the appendix of this manual and on our homepage www.invitek.com.*
8. The eluate can be stored at 4 °C up to 3 days or at −20 °C for longer periods.

3.5 Protocol: DNA isolation from fresh, frozen, or dried food material, and other samples of food origin

Please refer to chapter 3.3 “Preparation of starting material” for sample specific pre-treatment.

Please follow your local regulatory SOPs for food analysis. The lysis process described in this protocol is optimised for 200 mg sample. If you need to process and analyse more starting material or difficult samples, we recommend linear upscaling of the components for lysis (Lysis Buffer EM and Proteinase K). If required, additional Lysis Buffer EM and Proteinase K can be ordered separately (InviSorb® Spin Food Kit Add-On; Catalogue No. 1036020200).

Lysis:

1. Transfer up to 200 mg of homogenized starting material to a 2.0 ml Safe-Lock Tube (provided).
2. Add 650 µl **Lysis Buffer EM** for non-dry material or 850 µl for dry material. Add 20 µl **Proteinase K**, vortex thoroughly for 15 sec.

   Note: *If the sample is not fully suspended, add more Lysis Buffer EM and Proteinase K until it is suspended.*
3. Incubate the reaction mix at 65°C for 30 min (or longer) while vigorously shaking (≥ 800 rpm). Prolonged incubation time in the lysis buffer may obtain in higher DNA yields. During incubation prepare plate(s) for binding, washing and elution as described above.

   Optional: *To remove RNA from the sample, add 20 µl RNase A (10 mg/mL stock solution) per 200 mg of sample, vortex shortly and incubate for additional 30 min at room temperature.*

   Note: *During the incubation time the plates/cavities for the magnetic bead instrument can be prepared.*
4. After incubation centrifuge at > 10,000 x g for 10 min to pelletize food residues.
5. Carefully transfer 250 µl of the supernatant into the binding plate or binding cavity.

   Note: *According to the nature of the starting material, solid food residues are at the bottom of the tube while oils and fatty acids on top of the aqueous phase.* ***Transfer the aqueous phase without disturbing the pellet or the oily phase*** *(minor oil residues are removed in the following washing steps).*

Purification and Elution using the Magnetic Bead Instrument:

6. Prepare plates as shown in the appendix. Load prepared plate(s) into the instrument according to the manufacturer’s instructions.
7. Start instrument specific run protocol.

   Note: *Instrument specific run protocols are provided in the appendix of this manual and on our homepage* www.invitek.com.
8. After extraction a transfer of the purified nucleic acids to 1,5 ml Receiver Tubes (not provided) is recommended. The eluate can be stored at 4 °C up to 3 days or at −20 °C for longer periods.

4. Appendix

4.1 Supported Instruments / Run Protocols

Run protocols are provided for the instruments listed in the table below. Further protocols can be found on our homepage www.invitek.com. For other platforms please contact techsupport@invitek.com.

Instrument	Name Run File	Run File	Installation
KingFisher Flex	*InviMag_Food_ KF-Flex*	http://www.invitek.com/~/media/Invitek/Resources Grid/Run File Protocols for Invimag/InviMag_Food_KF-Flex	1. Copy run file to any folder of the computer connected to the instrument. 2. In the BindIt software select „Transfer“. 3. Select „DNA“ under User Protocols and click „Upload“. 4. Navigate to the run file and select it. Name protocol and ensure that „DNA“ is selected.
KingFisher Duo	*InviMag_Food_ KF-Duo*	http://www.invitek.com/~/media/Invitek/Resources Grid/Run File Protocols for Invimag/InviMag_Food_KF-Duo	1. Copy run file to any folder of the computer connected to the instrument. 2. In the BindIt software select „Transfer“. 3. Select „DNA“ under User Protocols and click „Upload“. 4. Navigate to the run file and select it. Name protocol and ensure that „DNA“ is selected.
Auto-Pure 96	*InviMag_Food_ 96*	http://www.invitek.com/~/media/Invitek/Resources Grid/Run File Protocols for Invimag/InviMag_Food_96	1. Create a folder "items" on a USB drive and copy the run file into it. 2. Insert USB drive into USB slot of the instrument. 3. On the instrument display, select Settings > Im.&Export > Import. 5. Select run file and tap "Import".
Auto-Pure Mini	*InviMagF*	http://www.invitek.com/~/media/Invitek/Resources Grid/Run File Protocols for Invimag/InviMagF	1. Create a folder "items" on a USB drive and copy the run file into it. 2. Insert USB drive into USB slot of the instrument. 3. On the instrument display, select Settings > Transfer > Import. 4. Select run file and tap "Import"
Auto-Pure Mini (QR Code)	*InviMagF*	InviMagF-Protocol code-1/1	1. On the instrument display, go to Run > ☰ > ⛶. 2. Scan the QR code with the barcode scanner.

4.2 Instructions for the KingFisher™ Flex / Auto-Pure 96

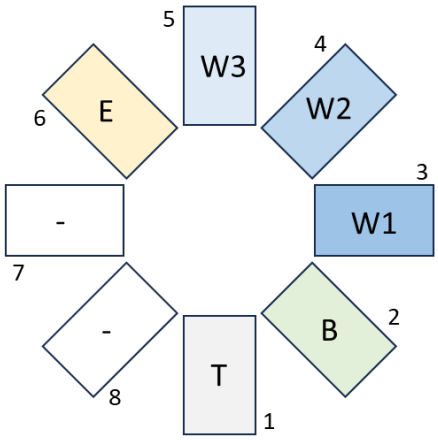
When operating the KingFisher™ Flex / Auto-Pure 96 make sure you have read and understood the manufacturer's instructions.

1. Determine the number of needed reactions including controls and prepare all plates needed for the purification procedure as follows. Label the short side of each plate accordingly.

   (Up to 96 samples can be processed at the same time.)

Plate setup for the KingFisher™ Flex / Auto-Pure 96:		
Name	**Position**	**Instruction**
Tip Plate	**T**	Place Tip Comb onto an Elution Plate.
Binding Plate	**B**	Add 300 µl **Binding Buffer GT** + 300 µl **96 - 100% ethanol** + 20 µl **MAP Solution D** into the cavities of a Deep Well Plate. *Note: Mix MAP Solution D before use by vortexing vigorously!*
Washing Plate 1	**W1**	Add 350 µl **Binding Buffer GT** + 350 µl **96 - 100% ethanol** into the cavities of a Deep Well Plate.
Washing Plate 2	**W2**	Add 800 µl **Wash Buffer HL** into the cavities of a Deep Well Plate.
Washing Plate 3	**W3**	Add 800 µl **80% ethanol** into the cavities of a Deep Well Plate.
Elution Plate	**E**	Add 100 µl **Elution Buffer M** into the cavities of an Elution Plate.

2. Perform the lysis for each sample as described in section 3.5 above and transfer 250 µl of the supernatant of each sample into the cavities of the Binding Plate.
3. Switch on the KingFisher™ Flex / Auto-Pure 96 instrument.
4. Place the Tip Comb onto an Elution Plate.
5. KingFisher™ Flex: Select the assay file **"InviMag_Food_KF-Flex"** on the display and press the "START" button.
6. Auto-Pure 96: Select the assay file **"InviMag_Food_96"** on the display and press the "START" button.
7. Insert the prefilled plates into the right positions of the instrument (see right) confirm every loading step. When all prefilled plates are loaded start the run. From this point, the instrument will continue with the purification process without any further user interaction.



8. After extraction a transfer of the purified nucleic acids to 1.5 ml Receiver Tubes (not provided) is recommended. The eluate can be stored at 4°C up to 3 days or at −20°C for longer periods.

4.3 Instructions for the Auto-Pure© Mini

When operating the Auto-Pure© Mini make sure you have read and understood the manufacturer's instructions.

1. Determine the number of needed reactions including controls and prepare all cavities needed for the purification procedure as follows.
   (Up to 16 samples can be processed at the same time.)

Setup for the Auto-Pure© Mini:		
Name	**Position**	**Instruction**
Binding Cavity	**B**	Add 300 µl **Binding Buffer GT** + 300 µl **96 - 100% ethanol** + 20 µl **MAP Solution D** into the cavities of the Deep Well Plate. *Note: Mix MAP Solution D before use by vortexing vigorously!*
Wash Cavity 1	**W1**	Add 350 µl **Binding Buffer GT** + 350 µl **96 - 100% ethanol** into the cavities of the Deep Well Plate.
Wash Cavity 2	**W2**	Add 800 µl **Wash Buffer HL** into the cavities of the Deep Well Plate.
Wash Cavity 3	**W3**	Add 800 µl **80% ethanol** into the cavities of the Deep Well Plate.
*Empty Cavity**	**-**	-
Elution Cavity	**E**	Add 100 µl **Elution Buffer M** into the cavities of the Deep Well Plate.

**The Auto-Pure© Mini instrument provides an additional cavity for a 4th washing step. This cavity needs to be left empty because elution can only be done in the dedicated Elution Cavities (columns 6 and 12). An example of a 96-well plate for 16 samples is shown below.*

	1	2	3	4	5	6	7	8	9	10	11	12
A	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
B	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
C	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
D	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
E	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
F	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
G	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
H	B	W1	W2	W3	-	E	B	W1	W2	W3	-	E
	Samples 1 – 8						Samples 9 – 16					

2. Perform the lysis for each sample as described in section 3.5 above and transfer 250 µl of the supernatant of each sample into the Binding Cavities ("B") of the Deep Well Plate.
3. Switch on the Auto-Pure© Mini instrument.
4. Insert the pre-filled plate into the Auto-Pure© Mini instrument.
5. Place the 8-Strip Tip Magnet Rod Sleeve(s) into the instrument.
6. Select the assay file "**InviMagF"** on the display and press the "PLAY" button.
7. Double check that your consumables are loaded correctly and confirm this in the software. From this point, the instrument will continue with the purification process without any further user interaction.
8. After extraction a transfer of the purified nucleic acids from the Elution Cavities ("E", columns 6 and 12) to 1.5 ml Receiver Tubes (not provided) is recommended. The eluate can be stored at 4°C up to 3 days or at −20°C for longer periods.

4.4 Instructions for the KingFisher™ Duo

When operating the KingFisher™ Duo make sure you have read and understood the manufacturer's instructions.

1. Determine the number of needed reactions including controls and prepare all cavities needed for the purification procedure as follows.
   (Up to 12 samples can be processed at the same time.)

Setup for the Auto-Pure© Mini:		
Name	**Position**	**Instruction**
Binding Cavity	**B**	Add 300 µl **Binding Buffer GT** + 300 µl **96 - 100% ethanol** + 20 µl **MAP Solution D** into the cavities of the Deep Well Plate. *Note: Mix MAP Solution D before use by vortexing vigorously!*
Wash Cavity 1	**W1**	Add 350 µl **Binding Buffer GT** + 350 µl **96 - 100% ethanol** into the cavities of the Deep Well Plate.
Wash Cavity 2	**W2**	Add 800 µl **Wash Buffer HL** into the cavities of the Deep Well Plate.
Wash Cavity 3	**W3**	Add 800 µl **80% ethanol** into the cavities of the Deep Well Plate.
Elution Strip*	**E**	Add 100 µl **Elution Buffer M** into the cavities of the Elution Strip*.
Tip Comb	**T**	Place tip comb in the last row of the Deep Well Plate as shown below.

**In the KingFisher™ Duo instrument the elution is done on a dedicated elution site, using dedicated Elution Strips. An example of a setup for 12 samples is shown below.*

Deep Well Plate:

	1	2	3	4	5	6	7	8	9	10	11	12
A	B	B	B	B	B	B	B	B	B	B	B	B
B	W1	W1	W1	W1	W1	W1	W1	W1	W1	W1	W1	W1
C	W2	W2	W2	W2	W2	W2	W2	W2	W2	W2	W2	W2
D	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3	W3
E	-	-	-	-	-	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-	-	-	-	-	-
H	T	T	T	T	T	T	T	T	T	T	T	T
	Samples 1 – 12											

Elution strip:

	1	2	3	4	5	6	7	8	9	10	11	12
A	E	E	E	E	E	E	E	E	E	E	E	E
	Samples 1 – 12											

2. Perform the lysis for each sample as described in section 3.5 above and transfer 250 µl of the supernatant of each sample into the Binding Cavities ("B") of the Deep Well Plate.
3. Place the tip comb into the last row of the Deep Well Plate ("T").
4. Switch on the KingFisher™ Duo instrument.
5. Insert the pre-filled plate and the Elution Strip into the instrument.
6. Select the assay file "**InviMag_Food_KF-Duo"** on the display and start run. From this point, the instrument will continue with the purification process without any further user interaction.
7. After extraction close the Elution Strip with the respective lid. The eluate can be stored at 4°C up to 3 days or at −20°C for longer periods.

4.5 Troubleshooting

Problem	Possible cause	Recommendation
Low amount of nucleic acids	Insufficient cell lysis	Increase lysis time with Lysis Buffer EM and Proteinase K. Continuous shaking improves lysis efficiency. Reduce amount of starting material to avoid column overload.
	Incomplete elution	Increase incubation time with preheated Elution Buffer M to 5-10 min. Use a higher volume of Elution Buffer M (max. 200 µl).
	Incorrect storage of starting material	Ensure that starting material is appropriately stored. Avoid repeated thaw-freeze cycles of the sample material.
	Wash Buffers were incorrectly prepared	Ensure, that the correct amount of ethanol is added to the Wash Buffers and that all solutions are stored firmly closed.
	Too much Elution Buffer	Elute with a lower volume of Elution Buffer (minimal 50 µl).
	Not enough Elution Buffer	Elute with a higher volume of Elution Buffer (up to 200 µl). *Note: on the King-Fisher™ Duo the maximum elution volume is 130 µl.*
	Old material	Ensure that the starting material is stored at appropriate conditions (–20°C/–80°C).
Degraded nucleic acids	Incorrect storage of starting material	Ensure that the starting material is stored at appropriate conditions (–20°C/–80°C).
	Salt carry-over during elution	Check the Wash Buffers for salt precipitates. If there are any precipitates visible, solve them by carefully warming up to 30°C. Ensure that the Wash Buffers are at room temperature before use.
DNA does not perform well in downstream applications (e.g., real-time PCR or NGS)	Insufficient cell lysis and/or too much starting material	See above remark about insufficient cell lysis. Increase centrifugation time/speed. Reduce the amount of starting material.

4.6 Warranty

Invitek Diagnostics guarantees the correct function of the kit for applications described in this manual and in accordance with the intended use. In accordance with Invitek Diagnostics EN ISO 13485 certified Quality Management System the performance of all kit components has been assessed to ensure product quality.
Any problems, incidents or defects shall be reported to Invitek Diagnostics immediately upon detection. Immediately upon receipt, inspect the product to ensure that it is complete and intact. In the event of any discrepancies, you must inform Invitek Diagnostics immediately in writing. Modifications of the kit and protocols and use that deviate from the intended purpose are not covered by any warranty.

Invitek Diagnostics reserves the right to change, alter, or modify any product to enhance its performance and design at any time.
Invitek Diagnostics warrants products as set forth in the General Terms and Conditions available at www.invitek.com. If you have any questions, please contact techsupport@invitek.com.

4.7 Symbols used on product and labelling.

 Manufacturer

Lot number

Catalogue number

 Expiry date

 Consult operating instructions

 Temperature limitation

 Do not reuse

 Amount of sample preparations

4.8 Further documents and supplementary information

Visit www.invitek.com for further information on:

- FAQs and troubleshooting tips.
- Manuals in different languages
- Safety data Sheets (MSDS)
- Web support
- Product videos

If, despite careful study of the operating instructions and further information, you still require assistance, please contact us at techsupport@invitek.com or the dealer responsible for you.

4.9 Ordering information

Product	Package Size	Catalogue No.
InviMag® Food Kit	5 x 96 preparations	7436300250
InviSorb® Spin Food Kit Add-On	120 ml	1036020200

Revision history

Revision	Date	Description
EN-v1-2025	2025-03-31	New document

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