abcam

ab307428

Anti-MTHFD2 antibody [EPR26938-20]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR26938-20
Purification technique	Affinity purification Protein A
Concentration	0.482 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Species	Human

Dilution info	1/30
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/5000
Notes	-

Species	Human
Dilution info	1/5000
Notes	-

Expected

Species	Rat
Dilution info	1/5000
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000

Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000

Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Target data

See full target information MTHFD2

Function	Although its dehydrogenase activity is NAD-specific, it can also utilize NADP at a reduced efficiency.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	MTHFD2 also known as methylenetetrahydrofolate dehydrogenase (NADP+ dependent) 2 is an enzyme with a mass of approximately 36 kDa. It catalyzes the conversion of methylenetetrahydrofolate to methenyltetrahydrofolate using NADP+ as a cofactor. MTHFD2 is a mitochondrial protein and is highly expressed in embryonic tissues and various cancers while showing low expression in normal adult tissues. This differential expression makes it an interesting target for cancer research.
Biological function summary	Methylenetetrahydrofolate dehydrogenase plays an important role in folate metabolism contributing to the one-carbon metabolic pathway. MTHFD2 is part of the tetrahydrofolate (THF) complex critical for DNA synthesis and repair. The enzyme supports the production of nucleotides and amino acids by providing necessary one-carbon units linking it to rapid cellular proliferation as seen in cancerous cells.
Pathways	MTHFD2 is key in connecting the folate-mediated one-carbon metabolic network to the central metabolism. It is involved in the metabolic pathways that synthesize purines and thymidylate. In these networks MTHFD2 interacts with proteins such as SHMT2 (serine hydroxymethyltransferase 2) facilitating serine to glycine conversion which is important for the provision of one-carbon donors for methylation reactions.
Associated diseases and disorders	The upregulation of MTHFD2 strongly associates with various cancers including breast and colorectal cancers. The involvement of MTHFD2 in these cancers indicates its potential as a biomarker and therapeutic target. Through cancer-related pathways MTHFD2 shows a connection to enzymes such as ALDH1L2 (aldehyde dehydrogenase 1 family member L2) which also participates in folate metabolism and influences cancer progression.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

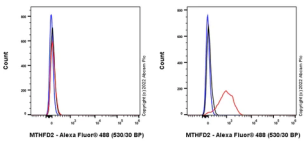
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

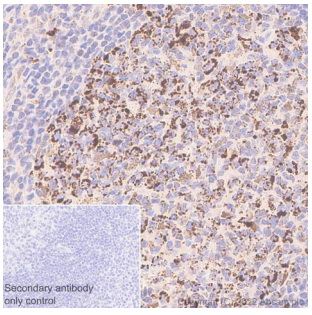
14 product images



Flow Cytometry (Intracellular) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Flow Cytometry (Intracellular) staining of Wild-type 293T using rabbit Anti-MTHFD2 antibody

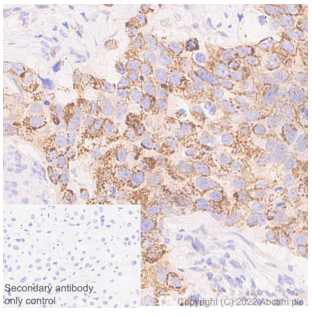
Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Wild-type 293T (human embryonic kidney epithelial cell, Right) / MTHFD2 knockout 293T (Left) cells labelling MTHFD2 with ab307428 at 1/5000 dilution (0.01ug) (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/2000 dilution was used as the secondary antibody. Positive staining on 293T cells (ab255449), while no staining on MTHFD2 knockout 293T cells (ab266383).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human tonsil using rabbit Anti-MTHFD2 antibody

Immunohistochemical analysis of paraffin-embedded Human tonsil tissue lABeling MTHFD2 with ab307428 at 1/500 (1.008 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on human tonsil (PMID: 24451681). The section was incubated with ab307428 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins

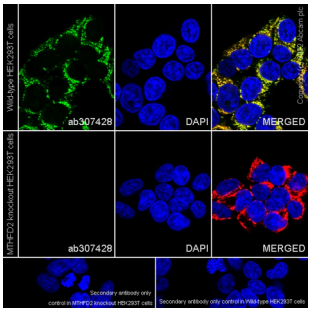


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human breast cancer using rabbit Anti-MTHFD2 antibody

Immunohistochemical analysis of paraffin-embedded Human breast cancer tissue lABeling MTHFD2 with ab307428 at 1/500 (1.008 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on human breast cancer (PMID: 26461067).

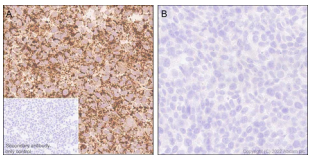
The section was incubated with ab307428 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunocytochemistry/ Immunofluorescence - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunocytochemistry/ Immunofluorescence staining of MTHFD2 KO HEK293T (MTHFD2 knockout human embryonic kidney epithelial cell), ab266383 using rabbit Anti-MTHFD2 antibody

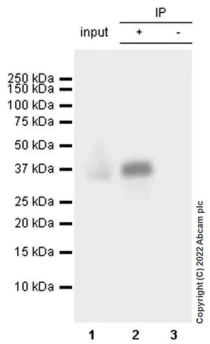
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized MTHFD2 KO HEK293T (MTHFD2 knockout human embryonic kidney epithelial cell), ab266383 cells labelling MTHFD2 with ab307428 at 1/1000 (0.504 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2 ug/ml dilution (Green). Confocal image showing mitochondrial staining in wildtype HEK293T cells and no staining in MTHFD2 knockout HEK293T cells. Image was taken with a confocal microscope(Leica-Microsystems, TCS SP8). is observed. ab197491 Anti-COX IV Mouse monoclonal antibody (Alexa Fluor® 647) - Mitochondrial Marker was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/ml dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Wild-type HEK293T using rabbit Anti-MTHFD2 antibody

Immunohistochemical analysis of paraffin-embedded (A) Wild-type HEK293 tissue labeling MTHFD2 with ab307428 at 1/500 (1.008 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on (A) Wild-type HEK293T (human embryonic kidney epithelial cell) cell pellet, no staining on (B) MTHFD2 knockout HEK293T (ab266383) cell pellet. The section was incubated with ab307428 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunoprecipitation - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 was immunoprecipitated from 0.35 mg HEK-293 (human embryonic kidney epithelial cell) whole cell lysate 10 ug with ab307428 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab307428 at 1/1000 dilution. VeriBlot for IP secondary antibody (HRP) (ab131366) was used at 1/5000 dilution.
Lane 1: HEK-293 (human embryonic kidney epithelial cell) whole cell lysate 10 ug
Lane 2: ab307428 IP in HEK-293 whole cell lysate
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab307428 in HEK-293 whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 1 second

All lanes:
Immunoprecipitation - Anti-MTHFD2 antibody [EPR26938-20] (ab307428) at 1/1000 dilution

Lane 1:
HEK-293 (human embryonic kidney epithelial cell) whole cell lysate 10 µg

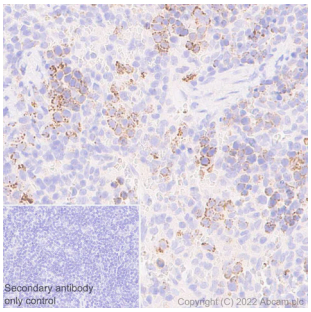
Lane 2:
HEK-293 whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Observed band size: 35 kDa

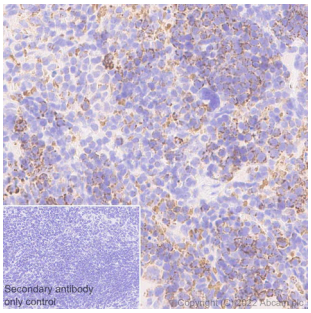
Exposure time: 1s



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Rat spleen using rabbit Anti-MTHFD2 antibody

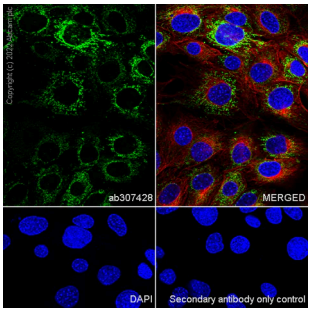
Immunohistochemical analysis of paraffin-embedded Rat spleen tissue lABeling MTHFD2 with ab307428 at 1/500 (1.008 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on rat spleen.The section was incubated with ab307428 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Mouse spleen using rabbit Anti-MTHFD2 antibody

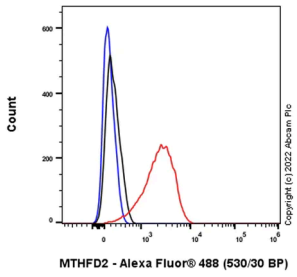
Immunohistochemical analysis of paraffin-embedded Mouse spleen tissue lABeling MTHFD2 with ab307428 at 1/500 (1.008 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on mouse spleen.The section was incubated with ab307428 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunocytochemistry/ Immunofluorescence - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Immunocytochemistry/ Immunofluorescence staining of MEF (mouse embryo fibroblast) using rabbit Anti-MTHFD2 antibody

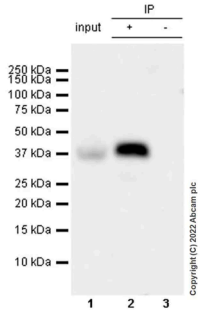
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized MEF (mouse embryo fibroblast) cells labelling MTHFD2 with ab307428 at 1/1000 (0.504 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2 ug/ml dilution (Green). Confocal image showing cytoplasmic staining in MEF cell line. Image was taken with a confocal microscope(Leica-Microsystems, TCS SP8). is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/ml dilution.



Flow Cytometry (Intracellular) - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 Flow Cytometry (Intracellular) staining of MEF (mouse embryonic fibroblast (immortalized)) using rabbit Anti-MTHFD2 antibody

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized MEF (mouse embryonic fibroblast (immortalized)) cells labelling MTHFD2 with ab307428 at 1/500 dilution (0.1ug) (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/2000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

MTHFD2 was immunoprecipitated from 0.35 mg MEF (mouse embryonic fibroblast) whole cell lysate 10 ug with ab307428 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab307428 at 1/1000 dilution. VeriBlot for IP secondary antibody (HRP) (ab131366) was used at 1/5000 dilution.
Lane 1: MEF (mouse embryonic fibroblast) whole cell lysate 10 ug
Lane 2: ab307428 IP in MEF whole cell lysate
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab307428 in MEF whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 10 seconds

All lanes:
Immunoprecipitation - Anti-MTHFD2 antibody [EPR26938-20] (ab307428) at 1/1000 dilution

Lane 1:
MEF (mouse embryonic fibroblast) whole cell lysate 10 µg

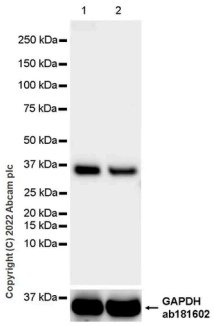
Lane 2:
MEF whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Observed band size: 35 kDa

Exposure time: 10s



Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

Blocking and diluting buffer and concentration: 5% NFDM/TBST Exposure time: Lane 1: 15 seconds, Lanes 2-6 and 8-9: 180 seconds, Lane 7: 48 seconds.
All lanes:
Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428) at 1/1000 dilution

Lane 1:
786-O (Human kidney renal cell adenocarcinoma) whole cell lysate 20 µg

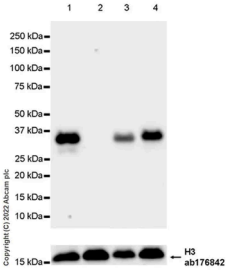
Lane 2:
LNCaP (human prostate carcinoma epithelial cell) whole cell lysate 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 35 kDa

Exposure time: 48s



Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

Blocking and diluting buffer and concentration: 5% NFDM/TBSTIn Western blot, ab307428 was shown to bind specifically to MTHFD2. A band was observed at 35 kDa in wild-type HEK-293 cell lysates whereas no signal observed at this size in MTHFD2 knockout cell line ab266383 (knockout cell lysate ab258528). Exposure time: 15 seconds
All lanes:
Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428) at 1/1000 dilution

Lane 1:
Wild-type HEK-293 (human embryonic kidney epithelial cell) whole cell lysate 20 µg

Lane 2:
MTHFD2 knockout HEK-293 whole cell lysate 20 µg

Lane 3:
MDA-MB-231 (human breast adenocarcinoma epithelial cell) whole cell lysate 20 µg

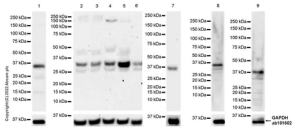
Lane 4:
MEF (mouse embryonic fibroblast) whole cell lysate 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 35 kDa

Exposure time: 15s



Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428)

Blocking and diluting buffer and concentration: 5% NFDM/TBSTThe Lanes 2-6 were developed using a high sensitivity ECL substrate. Exposure time:
All lanes:
Western blot - Anti-MTHFD2 antibody [EPR26938-20] (ab307428) at 1/1000 dilution

Lane 1:
Human tonsil tissue lysate 20 µg

Lane 2:
Human colon tissue lysate 20 µg

Lane 3:
Human colon cancer tissue lysate 20 µg

Lane 4:
Human testis tissue lysate 20 µg

Lane 5:
Human ovary tissue lysate 20 µg

Lane 6:
Mouse breast cancer tissue lysate 20 µg

Lane 7:
Mouse pancreas tissue lysate 20 µg

Lane 8:
Mouse kidney tissue lysate 20 µg

Lane 9:
Rat kidney tissue lysate 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Developed using the ECL technique.

Observed band size: 35 kDa

Exposure time: 15s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.