

# ABDA API usage

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## Version History

Date	Version	Changes
10-20-2023	0.1.0	Initial document
11-06-2023	0.2.0	Updates authorization schema (Bearer format)

## General Remarks

The ABDATA API has been provided by the Saarland University Clinical Pharmacy working group. The API is not intended for public use, but only for usage within the SafePolyMed project. This document is intended as a guide for using the API, it is, however, not a comprehensive manual or technical documentation of the API.

## Access

The API is provided under the following URL: <https://abdata.clinicalpharmacy.me/api>.

## Usage and Testing Info

The API is generally intended for usage with dedicated console utilities such as *curl* or the corresponding utilities in programming languages such as the *httr* or similar packages in the *R* programming language. There is no dedicated endpoint for testing access to the API yet. However, testing **GET** endpoints is possible in a browser, for instance <https://abdata.clinicalpharmacy.me/api/limits> should return

```
{
  "type": "https://tools.ietf.org/html/rfc7235#section-3.1",
  "title": "Unauthorized",
  "status": 401,
  "detail": "No login token provided.",
  "instance": "/limits"
}
```

## Authentication

This API uses *Java Web Token (jwt)* for authentication. A *jwt* is provided to you [upon login](#) and must be provided when accessing all other routes. See [GET /interactions/compounds](#) as an example on how to provide the token.

## Endpoints

The following is a list of endpoints for the API. All endpoints are only accessible **without a trailing slash!** All routes refer to <https://abdata.clinicalpharmacy.me/api> as the root URI. Currently, all access to all routes other than [POST /login](#) **require authentication**.

Group	Method	Route	Description
user	POST	/login	Log a user in. See <a href="#">POST /login</a> for more information and example usage.
user	GET	/renew-token	Retrieve a new token. No parameters.
information	GET	/formulations	Retrieve a list of all formulations within the database. No parameters.
information	GET	/limits	Request limits of the server. No parameters.
information	GET	/interactions/description	Request description of the interaction table. No parameters.
interactions	GET	/interactions/compounds	Interaction endpoint for compound names input. See <a href="#">GET /interactions/compounds</a> for more information and example usage.
interactions	POST	/interactions/compounds	Interaction endpoint for compound names input from JSON. See <a href="#">POST /interactions/compounds</a> for more information and example usage.
interactions	GET	/interactions/pzns	Interaction endpoint for pzn input. See <a href="#">GET /interactions/pzns</a> for more information and example usage.
interactions	POST	/interactions/pzns	Interaction endpoint for pzn input from JSON. See <a href="#">POST /interactions/pzns</a> for more information and example usage.
atc	GET	/atcs/drugs	Drug endpoint for ATC input

## Example Usage

### POST /login

#### Input

Provide your credentials as a *JSON*. The *JSON* must be structured as follows:

```
{
  "credentials": {
    "username": "your_username",
    "password": "your_password"
  }
}
```

#### Example Usage

```
curl -X POST "https://abdata.clinicalpharmacy.me/api/login" \
-H "accept: application/json" \
-H "Content-Type: application/json" \
-d '{"credentials":{"username":"username","password":"password"}}'
```

## Output

The return value for a successful **POST** request has the following structure:

```
{
  "yourjwttoken"
}
```

## GET /interactions/compounds

### Input

Check for interactions based on compound names provided as query parameters.

### Example Usage

```
# wrong
curl -X GET "https://abdata.clinicalpharmacy.me/api/interactions/compounds?
compounds=verapamil,simvastatin" \
-H "accept: application/json" \
-H "Content-Type: application/json" \
-H "Authentication: Bearer yourjwttoken"
```

## Output

The return value for a successful **GET** request has the following structure:

```
{
  "interactions": [
    {
      "plausibility": "plausible mechanism",
      "relevance": "severe",
      "frequency": "not known",
      "credibility": "high",
      "direction": "unidirectional interaction",
      "left_compound": "Simvastatin",
      "right_compound": "Verapamil",
      "left_atc": "C10AA01",
      "right_atc": "C08DA01",
      "left_formulation": "FTA",
```

```
    "right_formulation": "FTA",
    "left_medication": "ZOCOR 10mg",
    "right_medication": "Isoptin 80mg",
    "left_dose": "10 mg",
    "right_dose": "74.06 mg"
  }
],
"unknown_compounds": [],
"timestamp": "2023-10-20 13:20:57",
"api_version": "0.1.0",
"compounds": [
  "verapamil",
  "simvastatin"
]
}
```

## POST /interactions/compounds

### Input

Check for interactions based on compound names provided as *JSON*. Drug lists must be provided matched to an *ID*:

```
{
  [
    {
      "id": "1",
      "compounds": ["verapamil", "simvastatin"]
    },
    {
      "id": "2",
      "compounds": ["diltiazem", "amiodarone", "amlodipine", "lovastatin"]
    }
  ]
}
```

### Example Usage

```
curl -X POST "https://abdata.clinicalpharmacy.me/api/interactions/compounds" \
-H "Authentication: Bearer yourjwttoken" \
-H "Content-Type: application/json" \
-d '[{"id": "1", "compounds": ["verapamil", "simvastatin"]}, {"id": "2", "compounds": ["diltiazem", "amiodarone", "amlodipine", "lovastatin"]}']'
```

### Output

The return value for a successful **POST** request has the following structure:

```
{
  "results": [
    {
      "interactions": [
        {
          "plausibility": "plausible mechanism",
          "relevance": "severe",
          "frequency": "not known",
          "credibility": "high",
          "direction": "unidirectional interaction",
          "left_compound": "Simvastatin",
          "right_compound": "Verapamil",
          "left_atc": "C10AA01",
          "right_atc": "C08DA01",
          "left_formulation": "FTA",
          "right_formulation": "FTA",
          "left_medication": "ZOCOR 10mg",
          "right_medication": "Isoptin 80mg",
          "left_dose": "10 mg",
          "right_dose": "74.06 mg"
        }
      ],
      "unknown_compounds": [],
      "id": "1",
      "compounds": [
        "verapamil",
        "simvastatin"
      ]
    },
    {
      "interactions": [
        {
          "plausibility": "plausible mechanism",
          "relevance": "moderate",
          "frequency": "not known",
          "credibility": "weak",
          "direction": "undirected interaction",
          "left_compound": "Amiodarone",
          "right_compound": "Diltiazem",
          "left_atc": "C01BD01",
          "right_atc": "C08DB01",
          "left_formulation": "DFL",
          "right_formulation": "RET",
          "left_medication": "Cordarex 150mg/3ml Injektionslösung",
          "right_medication": "Dilzem 120mg retard",
          "left_dose": "141.98 mg",
          "right_dose": "110.3 mg"
        },
        {
          "plausibility": "plausible mechanism",
          "relevance": "severe",
          "frequency": "not known",
```

```
    "credibility": "high",
    "direction": "unidirectional interaction",
    "left_compound": "Lovastatin",
    "right_compound": "Amiodarone",
    "left_atc": "C10AA02",
    "right_atc": "C01BD01",
    "left_formulation": "TAB",
    "right_formulation": "DFL",
    "left_medication": "Lovastatin AL 20mg",
    "right_medication": "Cordarex 150mg/3ml Injektionslösung",
    "left_dose": "20 mg",
    "right_dose": "141.98 mg"
  },
  {
    "plausibility": "plausible mechanism",
    "relevance": "severe",
    "frequency": "not known",
    "credibility": "high",
    "direction": "unidirectional interaction",
    "left_compound": "Lovastatin",
    "right_compound": "Diltiazem",
    "left_atc": "C10AA02",
    "right_atc": "C08DB01",
    "left_formulation": "TAB",
    "right_formulation": "RET",
    "left_medication": "Lovastatin AL 20mg",
    "right_medication": "Dilzem 120mg retard",
    "left_dose": "20 mg",
    "right_dose": "110.3 mg"
  },
  {
    "relevance": "no statement possible",
    "left_compound": "Lovastatin",
    "right_compound": "Amlodipine",
    "right_atc": "C08CA01",
    "right_formulation": "TAB",
    "right_medication": "Norvasc 5mg",
    "right_dose": "5 mg"
  }
],
"unknown_compounds": [],
"id": "2",
"compounds": [
  "diltiazem",
  "amiodarone",
  "amlodipine",
  "lovastatin"
]
}
],
"timestamp": "2023-10-20 13:21:59",
"api_version": "0.1.0"
}
```

## POST /interactions/pzns

### Input

Check for interactions based on PZNs (*Pharmazentralnummer*, a German product identifier for drugs) provided as *JSON*. Lists of PZNs must be provided matched to an *ID*:

```
[
  {
    "id": "1",
    "pzns": ["03041347", "17145955", "00592733", "13981502"]
  },
  {
    "id": "2",
    "pzns": ["03041347", "17145955", "00592733", "13981502"]
  }
]
```

### Example Usage

```
curl -X POST "https://abdata.clinicalpharmacy.me/api/interactions/pzns" \
-H "Authentication: Bearer yourjwttoken" \
-H "Content-Type: application/json" \
-d '[{"id": "1", "pzns": ["03041347", "17145955", "00592733", "13981502"]}, {"id": "2", "pzns": ["03041347", "17145955", "00592733", "13981502"]}']
```

### Output

The return value for a successful **POST** request has the following structure:

```
{
  "results": [
    {
      "interactions": [
        {
          "plausibility": "plausible mechanism",
          "relevance": "minor",
          "frequency": "not known",
          "credibility": "weak",
          "direction": "unidirectional interaction",
          "left_PZN": "03041347",
          "right_PZN": "00592733"
        }
      ],
      "unknown_pzns": [],
    }
  ]
}
```

```
{
  "id": "1",
  "pzns": [
    "03041347",
    "17145955",
    "00592733",
    "13981502"
  ],
  {
    "interactions": [
      {
        "plausibility": "plausible mechanism",
        "relevance": "minor",
        "frequency": "not known",
        "credibility": "weak",
        "direction": "unidirectional interaction",
        "left_PZN": "03041347",
        "right_PZN": "00592733"
      }
    ],
    "unknown_pzns": [],
    "id": "2",
    "pzns": [
      "03041347",
      "17145955",
      "00592733",
      "13981502"
    ]
  },
  "timestamp": "2023-10-20 13:17:41",
  "api_version": "0.1.0"
}
```

## GET /atcs/drugs

### Input

Get drug names based on ATCs. Please note, that some ATCs may not resolve to a unique drug product, especially in case of fixed drug combinations

### Example Usage

```
curl -X GET "https://abdata.clinicalpharmacy.me/api/atcs/drugs?
atcs=C01BD01,C08DB01,C08DA01,J01CR02" \
-H "accept: */*" \
-H "Authentication: Bearer yourjwttoken"
```

### Output



The return value for a successful **GET** request has the following structure:

```
{
  "names": [
    {
      "atc": "C01BD01",
      "name_german": "Amiodaron",
      "name_english": "Amiodarone"
    },
    {
      "atc": "C08DA01",
      "name_german": "Verapamil",
      "name_english": "Verapamil"
    },
    {
      "atc": "C08DB01",
      "name_german": "Diltiazem",
      "name_english": "Diltiazem"
    },
    {
      "atc": "J01CR02",
      "name_german": "Amoxicillin und Beta-Lactamase-Inhibitor",
      "name_english": "Amoxicillin and beta-lactamase inhibitor"
    }
  ],
  "unknown_atcs": [],
  "timestamp": "2023-10-20 10:56:21",
  "api_version": "0.1.0",
  "atcs": ["C01BD01", "C08DB01", "C08DA01", "J01CR02"]
}
```