

# Classification of drugs

The name of the medicine should generally meet at least three basic requirements - it should be **unequivocal, unique and simple**. At present, we can meet the names of drugs according to three nomenclature principles - **chemical, generic and INN**. Medicines can be classified according to various aspects, classification according to ATC and rough classification into indication groups are common.

## Drug Nomenclature

### Chemical name

The chemical name is **unique and unequivocal**, but for the vast majority of drugs it is a name so *complicated* that it cannot be used. An example of a name used is *Aluminii hydroxidum*, *Kalii chloridum* or *Magnesii oxidum*. An example of an unused (and practically unusable) name is *(2RS)-2-[bis(2-chloroethyl)amino]tetrahydro-2H-1,3,2-oxazaphosphinane-2-oxide* (i.e. the cytostatic drug cyclophosphamide)

### Generic name

A generic name is a **similar to a trivial chemical name**. Generic names were created by research teams without fixed rules, so there was a risk of duplicates or different names for the same substance. Perhaps the best-known example of double naming is, for example, *acetaminophen* and *paracetamol*.

### INN names

INN (*International Nonproprietary Name*) is a modern **similar to generic names**. In order to avoid duplication, the new name is subject to a comment procedure. Relatively simple, but non-binding, rules are defined for creating a name:

- based on chemical structure, purpose of use or natural origin,
- one-word names are preferred,
- morphemes are recommended for some indicator groups (see table).

INNs are set in English, Latin, Spanish and French, other language variants can also be created.

morpheme	description
andr-	androgenic hormones
-azepam	diazepines
-buzone	phenylbutazone NSPZL
-caine	local anesthetic
cef-	cephalosporins ATB
-cilin	ATB derived from 6-aminopenicilanic acid
-kort-	corticoid
-cyclin	ATB of the tetracycline series
-ester-	estrogennally active substance
-gest-	gestagens
-ium	quaternary ammonium salt
-mycin	ATB produced by the genus <i>Streptomyces</i>
-olol	$\beta$ blocker of the propanolol group
-profen	ibuprofen NSPZL
prost-	prostacyclin
sulfa-	bactericidal sulfonamide
-verin	papaverine spasmolytic
-mab	monoclonal antibody
-pril	ACE inhibitor
gli-	oral antidiabetic drug – sulfonylurea derivative
-vastatin	statins
-am	benzodiazepine

## Production Names

Product names are the names of specific preparations. Product names of drugs are **property of the manufacturer** and usually their creation is governed by marketing rules. If the substance's patent protection expires, other companies can also manufacture it under their trade names. Often the trade name is created from a generic or INN name combined with the manufacturer's name. Such a drug is sometimes referred to as a true generic.

## ATC drug classification

However, the above-mentioned classification is not particularly suitable for statistical processing, which is why the hierarchical (five-level) ATC (Anatomically Therapeutic Chemically) classification was developed. Substances are classified according to the organ system they affect, according to the effect on the organism and according to the structure. The principle of ATC classification is summarized in the table:

ATC code'					description	example
C	N	C	C	N		
					two digits - active substance	N05BA <b>01</b> - diazepam
					one letter - chemotherapy group	N05BA <b>A</b> 01 - benzodiazepines
					one letter - indicator group	N05B <b>A</b> 01 - anxiolytic
					two digits - main therapeutic group	N <b>05</b> BA01 - psycholeptics
					one letter - anatomical group	N <b>05</b> BA01 - central nervous system

The list of drug classification systems would not be complete if there was no mention of the "natural" classification into indication groups (e.g. antibiotics,  $\beta$ -blockers, nootropics, etc.). This division is usually used in textbooks because it is very simple and illustrative, yet has a clear internal logic.

An example of the problematic use of such a system is a fairly common group of antibiotics. They are usually understood as medicines against infections. In fact, it should refer to the natural products of microorganisms acting against other living organisms; after all, cytotoxic antibiotics are also used in the therapy of tumors (e.g. doxorubicin) or in the therapy of osteoporosis (e.g. plikamycin). On the other hand, there are also substances that can be used to treat infections produced by higher plants, which are usually also called antibiotics, but the purist knows and uses the correct term - phytoncides.

<b>AND</b>	Digestive system and metabolism
<b>B'</b>	Blood and blood-forming organs
<b>C</b>	Cardiovascular system
<b>D'</b>	Dermatology
<b>G</b>	Urogenital system and sex hormones
<b>H'</b>	Systemic hormonal preparations except sex hormones and insulin
<b>J'</b>	Anti-infectives for systemic use
<b>L'</b>	Antineoplastics and immunomodulating drugs
<b>M'</b>	Musculoskeletal system
<b>N'</b>	Nervous system
<b>P'</b>	Antiparasitics, insecticides, repellents
<b>R</b>	Respiratory system
<b>WITH</b>	Sense organs
<b>IN</b>	Miscellaneous

## Links

### References

- World Health Organization. *world health organization* [online]. [cit. 2010-04-27]. <<http://www.who.int/medicines/services/inn/innquidance/en/>>.

### Recommended reading

- VEJRAŽKA, Martin – SVOBODOVÁ, Dana. *Terminologiae medicae ianua : Chemické a farmakologické*

