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Addendum¹ to
***"The use of stems in the selection of International
Nonproprietary Names (INN) for pharmaceutical
substances"*** WHO/EMP/RHT/TSN/2018.1

Programme on International Nonproprietary Names (INN)

***Health Products Policy and Standards (HPS)
Access to Medicines and Health Products (MHP)***

World Health Organization, Geneva

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Addendum* to "The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances" - WHO/EMP/RHT/TSN/2018.1

* This addendum is a cumulative list of all new stems selected by the INN Expert Group since the publication of "*The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances*" 2018.

-adenant	adenosine receptors antagonists ciforadenant (118), etrumadenant (124), inupadenant (123), preladenant (99), sipagladenant (127), taminadenant (120), tozadenant (106), vipadenant (103)
-bep	engineered or synthetic scaffold proteins, non-immunoglobulin variable domain derived dazodilibep (123), elarekibep (126), ensovibep (124), izokibep (122), lerodalcibep (123), palsucibep pegol (126), taldefgrobep alfa (121), tezatabep matraxetan (122), tifalibep (122) Under (c) category: abicipar pegol (108)
-bactam	β -lactamase inhibitors
-borbactam	β-lactamase inhibitors, boronic acid derivatives ledaborbactam (125), ledaborbactam etzadroxil (125), taniborbactam (119), vaborbactam (113), xeruborbactam (125)
-bresib	inhibitors of the bromodomain and extra-terminal motif (BET) family of bromodomain (BRD) proteins, antineoplastics alobresib (117), amredobresib (126), birabresib (115), mivebresib (115), molibresib (116), pelabresib (123), trotabresib (125)
-caftor	cystic fibrosis transmembrane regulator (CFTR) protein modulators, correctors, and amplifiers bamacaftor (121), deutivacaftor (118), dirocaftor (123), elexacaftor (121), galicaftor (119), icenticaftor (122), ivacaftor (104), lumacaftor (105), navacaftor (121), nesolicaftror (122), olacaftor (119), posenacaftor (122), tezacaftor (114), vanzacaftor (126)
-calcet/-calcet-	calcium-sensing receptors (CaSR) agonists cinacalcet (88), etelcalcetide (112), evocalcet (113), tecalcet (87), upacicalcet (118)
-cerfont	corticotropin-releasing factor (CRF) receptor antagonists crinecerfont (120), emicerfont (102), pexacerfont (97), tildacerfont (119), verucerfont (102)
-cianine	indocyanine fluorescence dye group nerindocianine (121), nizaracianine (125), omocianine (93), pafolacianine (124), pegsitacianine (125), pegulicianine (123) under (c) category: pudexacianinium chloride (122)
-(clo)sporin	ciclosporin derivatives ciclosporin (46), geclosporin (70), oxeclclosporin (70), ruclosporin (114), voclosporin (97)

-copan	complement receptor antagonists/ complement inhibitors avacopan (114), danicopan (119), iptacopan (122), nomacopan (119), pelecopan (127), vemircopan (124) to be listed under (c) category: pegcetacoplan (120), zilucoplan (118)
-corat	glucocorticoid receptor agonists dagrocorat (111), fosdagrocorat (111), mapracerat (102), mizacerat (127), tomicorat (108), velsecorat (121)
-corilant	glucocorticoid receptor antagonists (non-steroidal) dazucorilant (125), exicorilant (119), miricorilant (119), nenocorilant (127), relacorilant (116), zavacorilant (125)
-dil	<i>vasodilators</i>
-sudil	Rho protein kinase inhibitors belumosudil (123), cotosudil (123), fasudil (64), netarsudil (113), ripasudil (109), verosudil (112)
-espib	heat shock protein (HSP) 90 inhibitors (other than -mycin) cemdomespib (126), ganetesib (105), icapamespib (123), luminespib (108), onalespib (112), pimtespib (121), zelavespib (123)
-estrant	estrogen antagonists, including estrogen receptor down-regulators amcenestrant (122), bexirestrant (126), brilanestrant (115), camizestrant (125), elacestrant (115), fulvestrant (79), giredestrant (122), imlunestrant (126), rintodestrant (123), taragarestrant (127), vepdegestrant (127)
-fexor	farnesoid X receptor agonists cilofexor (119), nidufexor (118), omesdafexor (127), tropifexor (116), turofexorate isopropyl (103), vonafexor (122)
-fusp	fusion proteins¹ bintrafusp alfa (121), bizaxofusp (127), cinrebausp alfa (121), clervonafusp alfa (120), dalutrafusp alfa (125), eciskafusp alfa (127), efdamrofusp alfa (125), ensomafusp alfa (125), latikafusp (126), lepunausp alfa (125), lorukafusp alfa (120), lunaxafusp (127), modakafusp alfa (122), nanrilkefusp alfa (126), nomlabofusp (126), onfekafusp alfa (118), oplunofusp (123), pabinafusp alfa (120), rozibafusp alfa (120), simlukafusp alfa (121), tagraxofusp (118), tebentafusp (118), valanafusp alfa (118)

¹ A fusion protein is defined as a multifunctional protein derived from a single nucleotide sequence which may contain two or more genes or portions of genes with or without amino acid linker sequences. The genes should originally code for separate proteins, with at least two of them endowed with pharmacological action (e.g. action and targeting). “Notes from the fusion protein Working Group”, INN Working Document number 17.414 rev.

-ganan	antimicrobials, permeability increasing peptides iseganan (85), lefleuganan (127), omiganan (89), peceleganan (126), pexiganan (78), voxvoganan (126)
-golix	gonadotropin releasing hormone (GnRH) antagonists elagolix (99), linzagolix (118), opigolix (118), relugolix (107), sufugolix (89)
-inurad	urate transporter inhibitors dotinurad (116), epaminurad (118), lesinurad (105), puliginurad (127) ruzinurad (125), verinurad (111), xininurad (127)
-irine	cytotoxic pyrrolobenzodiazepine dimers and analogues camidanlumab tesirine (117), loncastuximab tesirine (117), mipasetamab uzoptirine (123), pivekimab sunirine (125), rolinsatamab talirine (119), rovalpituzumab tesirine (114), serclutamab talirine (120), tamrintamab pamozirine (120), vadastuximab talirine (113)
-ixafor-	chemokine CXCR4 antagonists balixafortide (112), burixafor (104), gallium (⁶⁸ Ga) boclatixafortide (126), mavorixafor (118), motixafortide (120), plerixafor (93), yttrium (⁹⁰ Y) anditixafortide (126)
-ixibat	ileal bile acid transporter (IBAT) inhibitors, bile acid reabsorption inhibitors barixibat (88), elobixibat (104), linerixibat (118), maralixibat chloride (113), odevixibat (119), volixibat (113)
-leuton	5-lipo-oxygenase inhibitors, anti-inflammatory atreleuton (78), diroleuton (118), epeleuton (118), fenleuton (72), setileuton (101), zileuton (63)
-madlin	E3 ubiquitin-protein ligase Mdm2 (Hdm2) inhibitors alrizomadlin (125), navtemadlin (124), rebemadlin (125), siremadlin (119), sulanemadlin (123)
	to be listed under category (c): idasanutlin (111), milademetan (117), serdemetan (101)
-meran	messenger RNA (mRNA) abdavomeran (124)*, acavameran (124), autogene cevumeran (122), davesomeran (128)*, elasomeran (125)*, enomimeran (123), famtozinameran (128)* fazulemeran (125), ganulameran (124)*, gindameran (123), imelasomeran (127)*, nadorameran (113), ontasameran (123), pidacmeran (124)*, pomulmeran (123), riltozinameran (126), secelasomeran (128)*, riltozinameran (126)*, tozinameran (124)*, ufremeran (127)*, vibosameran (123), zapomeran (127)*, zeldesmeran (127)*, zioclumeran (127), zorecimeran (124)*
	*additional prop.INN Lists COVID-19 (special editions)

-rsen	<i>antisense oligonucleotides</i>
-nersen	targeting neurological functions lexanersen (125), movronersen (125), nusinersen (112), rovanersen (125), rugonersen (125), tominersen (121), tadnersen (124), ulefnersen (127), zilganersen (126), zorevunersen (125) under (b) category: cenersen (97) under (c) category: baliforsen (116), casimersen (115), dematirsen (116), drisapersen (106), eteplirsen (103), golodirsen (115), inotersen (115), plenotersen (123), renadirsen (120), rimigorsen (116), sepofarsen (121), suvodirsen (121), varodarsen (116)
stat	enzyme inhibitors
-demstat	lysine-specific histone demethylase inhibitors bomedemstat (122), iadademstat (119), pulrodemstat (124), seclidemstat (118), vafidemstat (119)
-becestat	beta secretase inhibitors atabecestat (117), elenbecestat (117), umibecestat (119), lanabecestat (116), verubecestat (112)
-glustat	ceramide glucosyltransferase inhibitors duvoglustat (102), eliglustat (103), miglustat (85), sinbaglustat (121), venglustat (114)
-metostat	histone N-methyltransferase inhibitors lirametostat (123), onametostat (123), pemrametostat (123), pinometostat (112), tazemetostat (112), tulmimetostat (126), valemetostat (118)
-stinel	N-methyl-D-aspartate (NMDA) receptor co-agonists apimostinel (115), gavestinel (77), licostinel (77), rapastinel (111), zelquistinel (121)
-tide	<i>peptides</i>
-enatide	glucagon-like peptide-1 receptor (GLP1R) agonists, exenatide (exendin-4) and analogues albenatide (114), efpeglenatide (111), exenatide (89), langlenatide (111), lixisenatide (99), pegsebrenatide (127), peglozenatide (125), vurolenatide (126)
-tinib	tyrosine kinase inhibitors
-ertinib	epidermal growth factor receptor (EGFR) inhibitors abivertinib (119), befotertinib (123), canertinib (87), epertinib (115), lazertinib (117), mavelertinib (118), mobocertinib (121), olafertinib (121), osimertinib (113), rezivertinib (122), sacibertinib (127), sunvozertinib (125), tuxobertinib (125), xilertinib (121), zipalertinib (126), zorifertinib (121) (b) category: ulixertinib (113), ravoxertinib (115) (Erk inhibitors)

(c) category: afatinib (104), olmutinib (114), erlotinib (85), gefitinib (85), mubritinib (90), nazartinib (114), mubritinib (90), nazartinib (114)

-trectinib

tropomyosin receptor kinase (TRK) inhibitors

anizatrectinib (127), entrectinib (113), larotrectinib (115),
paltimatrecentinib (126), repotrectinib (120), selitrectinib (120),
taletrectinib (123), utatrectinib (126)

-tirom(-)

antihyperlidaemics, thyromimetic derivatives

acetiromate (30), axitirome (82), bentiromide (41), eprotirome (99),
omzotirome (125), resmetirom (119), sobetirome (126)

-toclax

B-cell lymphoma 2 (Bcl-2) inhibitors, antineoplastics

imlatoclax (115), lisaftoclax (125), mirzotamab clezutoclax (121),
murizatoclax (122), navitoclax (103), obatoclax (94), pelcitoclax
(122), tapotoclax (121), venetoclax (111)

-turev

under the advanced therapy scheme for: oncolytic viruses

canerpaturev (117), gebasaxturev (126), lerapolturev (125),
suratadenoturev (123), tasadenoturev (117), teserpaturev (119)
under (c) category: enadenotucirev (111)

-vivint

Wnt signaling inhibitors

cirtuvivint (123), foscenvivint (124), ipivivint (123), lorecivivint
(119), tegavivint (118), teplinovivint (123)

Amendments were also made in the following stems' definitions:

-eridine

from *analgesics, pethidine derivatives*

to analgesics, pethidine derivatives and other synthetic small molecule μ-opioid receptor agonists

kef

from *enkephalin agonists*

to enkephalin, endorphin and dynorphin opioid δ, μ and κ receptor agonists

-ilide

from *class III antiarrhythmics, sematilide derivatives*

to class III antiarrhythmics, -sematilide derivatives

-imus

from *immunosuppressants, other than antineoplastics*

to immunosuppressants, other than antineoplastics

-isant

from *histamine H₃ receptor antagonists*

to histamine H₃ receptor antagonists, inverse agonists

-(o)nidine

from *antihypertensives, clonidine derivatives*

to α₂ adrenoreceptor agonists

under *-tant*

-netant

from *neurokinin NK3 receptor antagonists*

to neurokinin NK3 and dual NK3-NK1 receptor antagonists

-pressin

from *vasoconstrictors, vasopressin derivatives*

to vasoconstrictors, vasopressin analogues

-pride

from *sulpiride derivatives*

to sulpiride derivatives and analogues

-prim

from *antimicrobials, dihydrofolate reductase (DHFR) inhibitors, trimethoprim derivatives*

to antimicrobials, dihydrofolate reductase (DHFR) inhibitors, trimethoprim analogues

-renone

from *aldosterone receptor antagonists, spironolactone derivatives*

to mineralocorticoid receptor (MR, MCR, aldosterone receptor) antagonists

-siran

from *small interfering RNA*

to small interfering RNA including siRNA, miRNA and piRNA

under *-tide*

-glutide

from *glucagon-like peptide (GLP) analogues*

to glucagon-like peptide (GLP) analogues and agonists

Amendments were also made in the stem's infix:

-gromab (under -mab)

from -grosmab

for the designation of INN for monoclonal antibodies targeting skeletal muscle mass related growth factors and receptors

-ki- (under -mab)

for the designation of INN for monoclonal antibodies targeting interleukins, to interleukins and interleukin receptors

Please note that a new naming scheme for monoclonal antibodies has been adopted at the 73rd INN Consultation and can be retrieved from our webpages at:

[https://cdn.who.int/media/docs/default-source/international-nonproprietary-names-\(inn\)/new_mab_nomenclature-_2021.pdf?sfvrsn=207e78cb_12&download=true](https://cdn.who.int/media/docs/default-source/international-nonproprietary-names-(inn)/new_mab_nomenclature-_2021.pdf?sfvrsn=207e78cb_12&download=true)