SUPPLEMENTARY DATA

Rational *in silico* design of novel α-glucosidase inhibitory peptides and *in vitro* evaluation of promising candidates

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Table S1: The 10 tripeptide library of the designed α-glucosidase inhibitory peptides and the details of the BIOPEP digestion of the peptides.

S/No	Tripeptide
1	SPA
2	SPM
3	TPA
4	TPM
5	YPA
6	YPM
7	KPA
8	KPM
9	RPA
10	RPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S2: The 200 tetrapeptide library of the designed α-glucosidase inhibitory peptides and the details of the BIOPEP digestion of the peptides.

S/No	Tetrapeptide									
1	SAPA	SAPM	TAPA	TAPM	YAPA	YAPM	KAPA	KAPM	RAPA	RAPM
2	SCPA	SCPM	TCPA	TCPM	YCPA	YCPM	KCPA	KCPM	RCPA	RCPM
3	SDPA	SDPM	TDPA	TDPM	YDPA	YDPM	KDPA	KDPM	RDPA	RDPM
4	SEPA	SEPM	TEPA	TEPM	YEPA	YEPM	KEPA	KEPM	REPA	REPM
5	SFPA	SFPM	TFPA	TFPM	YFPA	YFPM	KFPA	KFPM	RFPA	RFPM
6	SGPA	SGPM	TGPA	TGPM	YGPA	YGPM	KGPA	KGPM	RGPA	RGPM
7	SHPA	SHPM	THPA	THPM	YHPA	YHPM	KHPA	KHPM	RHPA	RHPM
8	SIPA	SIPM	TIPA	TIPM	YIPA	YIPM	KIPA	KIPM	RIPA	RIPM
9	SKPA	SKPM	TKPA	TKPM	YKPA	YKPM	KKPA	KKPM	RKPA	RKPM
10	SLPA	SLPM	TLPA	TLPM	YLPA	YLPM	KLPA	KLPM	RLPA	RLPM
11	SMPA	SMPM	TMPA	TMPM	YMPA	YMPM	KMPA	KMPM	RMPA	RMPM
12	SNPA	SNPM	TNPA	TNPM	YNPA	YNPM	KNPA	KNPM	RNPA	RNPM
13	SPPA	SPPM	TPPA	TPPM	YPPA	YPPM	KPPA	KPPM	RPPA	RPPM
14	SQPA	SQPM	TQPA	TQPM	YQPA	YQPM	KQPA	KQPM	RQPA	RQPM
15	SRPA	SRPM	TRPA	TRPM	YRPA	YRPM	KRPA	KRPM	RRPA	RRPM
16	SSPA	SSPM	TSPA	TSPM	YSPA	YSPM	KSPA	KSPM	RSPA	RSPM
17	STPA	STPM	TTPA	TTPM	YTPA	YTPM	KTPA	KTPM	RTPA	RTPM
18	SVPA	SVPM	TVPA	TVPM	YVPA	YVPM	KVPA	KVPM	RVPA	RVPM
19	SWPA	SWPM	TWPA	TWPM	YWPA	YWPM	KWPA	KWPM	RWPA	RWPM
20	SYPA	SYPM	TYPA	TYPM	YYPA	YYPM	KYPA	KYPM	RYPA	RYPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S3: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from SPA) and the details of the BIOPEP digestion of the peptides.

No	Pentapeptides designed from all possible combinations of SPA																			
1	SAAPA	SCAPA	SDAPA	SEAPA	SFAPA	SGAPA	SHAPA	SIAPA	SKAPA	SLAPA	SMAPA	SNAPA	SPAPA	SQAPA	SRAPA	SSAPA	STAPA	SVAPA	SWAPA	SYAPA
2	SACPA	SCCPA	SDCPA	SECPA	SFCPA	SGCPA	SHCPA	SICPA	SKCPA	SLCPA	SMCPA	SNCPA	SPCPA	SQCPA	SRCPA	SSCPA	STCPA	SVCPA	SWCPA	SYCPA
3	SADPA	SCDPA	SDDPA	SEDPA	SFDPA	SGDPA	SHDPA	SIDPA	SKDPA	SLDPA	SMDPA	SNDPA	SPDPA	SQDPA	SRDPA	SSDPA	STDPA	SVDPA	SWDPA	SYDPA
4	SAEPA	SCEPA	SDEPA	SEEPA	SFEPA	SGEPA	SHEPA	SIEPA	SKEPA	SLEPA	SMEPA	SNEPA	SPEPA	SQEPA	SREPA	SSEPA	STEPA	SVEPA	SWEPA	SYEPA
5	SAFPA	SCFPA	SDFPA	SEFPA	SFFPA	SGFPA	SHFPA	SIFPA	SKFPA	SLFPA	SMFPA	SNFPA	SPFPA	SQFPA	SRFPA	SSFPA	STFPA	SVFPA	SWFPA	SYFPA
6	SAGPA	SCGPA	SDGPA	SEGPA	SFGPA	SGGPA	SHGPA	SIGPA	SKGPA	SLGPA	SMGPA	SNGPA	SPGPA	SQGPA	SRGPA	SSGPA	STGPA	SVGPA	SWGPA	SYGPA
7	SAHPA	SCHPA	SDHPA	SEHPA	SFHPA	SGHPA	SHHPA	SIHPA	SKHPA	SLHPA	SMHPA	SNHPA	SPHPA	SQHPA	SRHPA	SSHPA	STHPA	SVHPA	SWHPA	SYHPA
8	SAIPA	SCIPA	SDIPA	SEIPA	SFIPA	SGIPA	SHIPA	SIIPA	SKIPA	SLIPA	SMIPA	SNIPA	SPIPA	SQIPA	SRIPA	SSIPA	STIPA	SVIPA	SWIPA	SYIPA
9	SAKPA	SCKPA	SDKPA	SEKPA	SFKPA	SGKPA	SHKPA	SIKPA	SKKPA	SLKPA	SMKPA	SNKPA	SPKPA	SQKPA	SRKPA	SSKPA	STKPA	SVKPA	SWKPA	SYKPA
10	SALPA	SCLPA	SDLPA	SELPA	SFLPA	SGLPA	SHLPA	SILPA	SKLPA	SLLPA	SMLPA	SNLPA	SPLPA	SQLPA	SRLPA	SSLPA	STLPA	SVLPA	SWLPA	SYLPA
11	SAMPA	SCMPA	SDMPA	SEMPA	SFMPA	SGMPA	SHMPA	SIMPA	SKMPA	SLMPA	SMMPA	SNMPA	SPMPA	SQMPA	SRMPA	SSMPA	STMPA	SVMPA	SWMPA	SYMPA
12	SANPA	SCNPA	SDNPA	SENPA	SFNPA	SGNPA	SHNPA	SINPA	SKNPA	SLNPA	SMNPA	SNNPA	SPNPA	SQNPA	SRNPA	SSNPA	STNPA	SVNPA	SWNPA	SYNPA
13	SAPPA	SCPPA	SDPPA	SEPPA	SFPPA	SGPPA	SHPPA	SIPPA	SKPPA	SLPPA	SMPPA	SNPPA	SPPPA	SQPPA	SRPPA	SSPPA	STPPA	SVPPA	SWPPA	SYPPA
14	SAQPA	SCQPA	SDQPA	SEQPA	SFQPA	SGQPA	SHQPA	SIQPA	SKQPA	SLQPA	SMQPA	SNQPA	SPQPA	SQQPA	SRQPA	SSQPA	STQPA	SVQPA	SWQPA	SYQPA
15	SARPA	SCRPA	SDRPA	SERPA	SFRPA	SGRPA	SHRPA	SIRPA	SKRPA	SLRPA	SMRPA	SNRPA	SPRPA	SQRPA	SRRPA	SSRPA	STRPA	SVRPA	SWRPA	SYRPA
16	SASPA	SCSPA	SDSPA	SESPA	SFSPA	SGSPA	SHSPA	SISPA	SKSPA	SLSPA	SMSPA	SNSPA	SPSPA	SQSPA	SRSPA	SSSPA	STSPA	SVSPA	SWSPA	SYSPA
17	SATPA	SCTPA	SDTPA	SETPA	SFTPA	SGTPA	SHTPA	SITPA	SKTPA	SLTPA	SMTPA	SNTPA	SPTPA	SQTPA	SRTPA	SSTPA	STTPA	SVTPA	SWTPA	SYTPA
18	SAVPA	SCVPA	SDVPA	SEVPA	SFVPA	SGVPA	SHVPA	SIVPA	SKVPA	SLVPA	SMVPA	SNVPA	SPVPA	SQVPA	SRVPA	SSVPA	STVPA	SVVPA	SWVPA	SYVPA
19	SAWPA	SCWPA	SDWPA	SEWPA	SFWPA	SGWPA	SHWPA	SIWPA	SKWPA	SLWPA	SMWPA	SNWPA	SPWPA	SQWPA	SRWPA	SSWPA	STWPA	SVWPA	SWWPA	SYWPA
20	SAYPA	SCYPA	SDYPA	SEYPA	SFYPA	SGYPA	SHYPA	SIYPA	SKYPA	SLYPA	SMYPA	SNYPA	SPYPA	SQYPA	SRYPA	SSYPA	STYPA	SVYPA	SWYPA	SYYPA

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S4: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from SPM) and the details of the BIOPEP digestion of the peptides.

No	Pentapeptides designed from all possible combinations of SPM																			
1	SAAPM	SCAPM	SDAPM	SEAPM	SFAPM	SGAPM	SHAPM	SIAPM	SKAPM	SLAPM	SMAPM	SNAPM	SPAPM	SQAPM	SRAPM	SSAPM	STAPM	SVAPM	SWAPM	SYAPM
2	SACPM	SCCPM	SDCPM	SECPM	SFCPM	SGCPM	SHCPM	SICPM	SKCPM	SLCPM	SMCPM	SNCPM	SPCPM	SQCPM	SRCPM	SSCPM	STCPM	SVCPM	SWCPM	SYCPM
3	SADPM	SCDPM	SDDPM	SEDPM	SFDPM	SGDPM	SHDPM	SIDPM	SKDPM	SLDPM	SMDPM	SNDPM	SPDPM	SQDPM	SRDPM	SSDPM	STDPM	SVDPM	SWDPM	SYDPM
4	SAEPM	SCEPM	SDEPM	SEEPM	SFEPM	SGEPM	SHEPM	SIEPM	SKEPM	SLEPM	SMEPM	SNEPM	SPEPM	SQEPM	SREPM	SSEPM	STEPM	SVEPM	SWEPM	SYEPM
5	SAFPM	SCFPM	SDFPM	SEFPM	SFFPM	SGFPM	SHFPM	SIFPM	SKFPM	SLFPM	SMFPM	SNFPM	SPFPM	SQFPM	SRFPM	SSFPM	STFPM	SVFPM	SWFPM	SYFPM
6	SAGPM	SCGPM	SDGPM	SEGPM	SFGPM	SGGPM	SHGPM	SIGPM	SKGPM	SLGPM	SMGPM	SNGPM	SPGPM	SQGPM	SRGPM	SSGPM	STGPM	SVGPM	SWGPM	SYGPM
7	SAHPM	SCHPM	SDHPM	SEHPM	SFHPM	SGHPM	SHHPM	SIHPM	SKHPM	SLHPM	SMHPM	SNHPM	SPHPM	SQHPM	SRHPM	SSHPM	STHPM	SVHPM	SWHPM	SYHPM
8	SAIPM	SCIPM	SDIPM	SEIPM	SFIPM	SGIPM	SHIPM	SIIPM	SKIPM	SLIPM	SMIPM	SNIPM	SPIPM	SQIPM	SRIPM	SSIPM	STIPM	SVIPM	SWIPM	SYIPM
9	SAKPM	SCKPM	SDKPM	SEKPM	SFKPM	SGKPM	SHKPM	SIKPM	SKKPM	SLKPM	SMKPM	SNKPM	SPKPM	SQKPM	SRKPM	SSKPM	STKPM	SVKPM	SWKPM	SYKPM
10	SALPM	SCLPM	SDLPM	SELPM	SFLPM	SGLPM	SHLPM	SILPM	SKLPM	SLLPM	SMLPM	SNLPM	SPLPM	SQLPM	SRLPM	SSLPM	STLPM	SVLPM	SWLPM	SYLPM
11	SAMPM	SCMPM	SDMPM	SEMPM	SFMPM	SGMPM	SHMPM	SIMPM	SKMPM	SLMPM	SMMPM	SNMPM	SPMPM	SQMPM	SRMPM	SSMPM	STMPM	SVMPM	SWMPM	SYMPM
12	SANPM	SCNPM	SDNPM	SENPM	SFNPM	SGNPM	SHNPM	SINPM	SKNPM	SLNPM	SMNPM	SNNPM	SPNPM	SQNPM	SRNPM	SSNPM	STNPM	SVNPM	SWNPM	SYNPM
13	SAPPM	SCPPM	SDPPM	SEPPM	SFPPM	SGPPM	SHPPM	SIPPM	SKPPM	SLPPM	SMPPM	SNPPM	SPPPM	SQPPM	SRPPM	SSPPM	STPPM	SVPPM	SWPPM	SYPPM
14	SAQPM	SCQPM	SDQPM	SEQPM	SFQPM	SGQPM	SHQPM	SIQPM	SKQPM	SLQPM	SMQPM	SNQPM	SPQPM	SQQPM	SRQPM	SSQPM	STQPM	SVQPM	SWQPM	SYQPM
15	SARPM	SCRPM	SDRPM	SERPM	SFRPM	SGRPM	SHRPM	SIRPM	SKRPM	SLRPM	SMRPM	SNRPM	SPRPM	SQRPM	SRRPM	SSRPM	STRPM	SVRPM	SWRPM	SYRPM
16	SASPM	SCSPM	SDSPM	SESPM	SFSPM	SGSPM	SHSPM	SISPM	SKSPM	SLSPM	SMSPM	SNSPM	SPSPM	SQSPM	SRSPM	SSSPM	STSPM	SVSPM	SWSPM	SYSPM
17	SATPM	SCTPM	SDTPM	SETPM	SFTPM	SGTPM	SHTPM	SITPM	SKTPM	SLTPM	SMTPM	SNTPM	SPTPM	SQTPM	SRTPM	SSTPM	STTPM	SVTPM	SWTPM	SYTPM
18	SAVPM	SCVPM	SDVPM	SEVPM	SFVPM	SGVPM	SHVPM	SIVPM	SKVPM	SLVPM	SMVPM	SNVPM	SPVPM	SQVPM	SRVPM	SSVPM	STVPM	SVVPM	SWVPM	SYVPM
19	SAWPM	SCWPM	SDWPM	SEWPM	SFWPM	SGWPM	SHWPM	SIWPM	SKWPM	SLWPM	SMWPM	SNWPM	SPWPM	SQWPM	SRWPM	SSWPM	STWPM	SVWPM	SWWPM	SYWPM
20	SAYPM	SCYPM	SDYPM	SEYPM	SFYPM	SGYPM	SHYPM	SIYPM	SKYPM	SLYPM	SMYPM	SNYPM	SPYPM	SQYPM	SRYPM	SSYPM	STYPM	SVYPM	SWYPM	SYYPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S5: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from TPA) and the details of the BIOPEP digestion of the peptides.

NO	Pentapeptides designed from all possible combinations of TPA																			
1	TAAPA	TCAPA	TDAPA	TEAPA	TFAPA	TGAPA	THAPA	TIAPA	TKAPA	TLAPA	TMAPA	TNAPA	TPAPA	TQAPA	TRAPA	TSAPA	TTAPA	TVAPA	TWAPA	TYAPA
2	TACPA	TCCPA	TDCPA	TECPA	TFCPA	TGCPA	THCPA	TICPA	TKCPA	TLCPA	TMCPA	TNCPA	TPCPA	TQCPA	TRCPA	TSCPA	TTCPA	TVCPA	TWCPA	TYCPA
3	TADPA	TCDPA	TDDPA	TEDPA	TFDPA	TGDPA	THDPA	TIDPA	TKDPA	TLDPA	TMDPA	TNDPA	TPDPA	TQDPA	TRDPA	TSDPA	TTDPA	TVDPA	TWDPA	TYDPA
4	TAEPA	TCEPA	TDEPA	TEEPA	TFEPA	TGEPA	THEPA	TIEPA	TKEPA	TLEPA	TMEPA	TNEPA	TPEPA	TQEPA	TREPA	TSEPA	TTEPA	TVEPA	TWEPA	TYEPA
5	TAFPA	TCFPA	TDFPA	TEFPA	TFFPA	TGFPA	THFPA	TIFPA	TKFPA	TLFPA	TMFPA	TNFPA	TPFPA	TQFPA	TRFPA	TSFPA	TTFPA	TVFPA	TWFPA	TYFPA
6	TAGPA	TCGPA	TDGPA	TEGPA	TFGPA	TGGPA	THGPA	TIGPA	TKGPA	TLGPA	TMGPA	TNGPA	TPGPA	TQGPA	TRGPA	TSGPA	TTGPA	TVGPA	TWGPA	TYGPA
7	TAHPA	TCHPA	TDHPA	TEHPA	TFHPA	TGHPA	THHPA	TIHPA	TKHPA	TLHPA	TMHPA	TNHPA	TPHPA	TQHPA	TRHPA	TSHPA	TTHPA	TVHPA	TWHPA	TYHPA
8	TAIPA	TCIPA	TDIPA	TEIPA	TFIPA	TGIPA	THIPA	TIIPA	TKIPA	TLIPA	TMIPA	TNIPA	TPIPA	TQIPA	TRIPA	TSIPA	TTIPA	TVIPA	TWIPA	TYIPA
9	TAKPA	TCKPA	TDKPA	TEKPA	TFKPA	TGKPA	THKPA	TIKPA	TKKPA	TLKPA	TMKPA	TNKPA	TPKPA	TQKPA	TRKPA	TSKPA	TTKPA	TVKPA	TWKPA	TYKPA
10	TALPA	TCLPA	TDLPA	TELPA	TFLPA	TGLPA	THLPA	TILPA	TKLPA	TLLPA	TMLPA	TNLPA	TPLPA	TQLPA	TRLPA	TSLPA	TTLPA	TVLPA	TWLPA	TYLPA
11	TAMPA	TCMPA	TDMPA	TEMPA	TFMPA	TGMPA	THMPA	TIMPA	TKMPA	TLMPA	TMMPA	TNMPA	TPMPA	TQMPA	TRMPA	TSMPA	TTMPA	TVMPA	TWMPA	TYMPA
12	TANPA	TCNPA	TDNPA	TENPA	TFNPA	TGNPA	THNPA	TINPA	TKNPA	TLNPA	TMNPA	TNNPA	TPNPA	TQNPA	TRNPA	TSNPA	TTNPA	TVNPA	TWNPA	TYNPA
13	TAPPA	TCPPA	TDPPA	TEPPA	TFPPA	TGPPA	THPPA	TIPPA	TKPPA	TLPPA	TMPPA	TNPPA	TPPPA	TQPPA	TRPPA	TSPPA	TTPPA	TVPPA	TWPPA	TYPPA
14	TAQPA	TCQPA	TDQPA	TEQPA	TFQPA	TGQPA	THQPA	TIQPA	TKQPA	TLQPA	TMQPA	TNQPA	TPQPA	TQQPA	TRQPA	TSQPA	TTQPA	TVQPA	TWQPA	TYQPA
15	TARPA	TCRPA	TDRPA	TERPA	TFRPA	TGRPA	THRPA	TIRPA	TKRPA	TLRPA	TMRPA	TNRPA	TPRPA	TQRPA	TRRPA	TSRPA	TTRPA	TVRPA	TWRPA	TYRPA
16	TASPA	TCSPA	TDSPA	TESPA	TFSPA	TGSPA	THSPA	TISPA	TKSPA	TLSPA	TMSPA	TNSPA	TPSPA	TQSPA	TRSPA	TSSPA	TTSPA	TVSPA	TWSPA	TYSPA
17	TATPA	TCTPA	TDTPA	TETPA	TFTPA	TGTPA	THTPA	TITPA	TKTPA	TLTPA	TMTPA	TNTPA	TPTPA	TQTPA	TRTPA	TSTPA	TTTPA	TVTPA	TWTPA	TYTPA
18	TAVPA	TCVPA	TDVPA	TEVPA	TFVPA	TGVPA	THVPA	TIVPA	TKVPA	TLVPA	TMVPA	TNVPA	TPVPA	TQVPA	TRVPA	TSVPA	TTVPA	TVVPA	TWVPA	TYVPA
19	TAWPA	TCWPA	TDWPA	TEWPA	TFWPA	TGWPA	THWPA	TIWPA	TKWPA	TLWPA	TMWPA	TNWPA	TPWPA	TQWPA	TRWPA	TSWPA	TTWPA	TVWPA	TWWPA	TYWPA
20	TAYPA	TCYPA	TDYPA	TEYPA	TFYPA	TGYPA	THYPA	TIYPA	TKYPA	TLYPA	TMYPA	TNYPA	TPYPA	TQYPA	TRYPA	TSYPA	TTYPA	TVYPA	TWYPA	TYYPA

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S6: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from TPM) and the details of the BIOPEP digestion of the peptides.

NO	Pentapeptides designed from all possible combinations of TPM																			
1	TAAPM	TCAPM	TDAPM	TEAPM	TFAPM	TGAPM	THAPM	TIAPM	TKAPM	TLAPM	TMAPM	TNAPM	TPAPM	TQAPM	TRAPM	TSAPM	TTAPM	TVAPM	TWAPM	TYAPM
2	TACPM	TCCPM	TDCPM	TECPM	TFCPM	TGCPM	THCPM	TICPM	TKCPM	TLCPM	TMCPM	TNCPM	TPCPM	TQCPM	TRCPM	TSCPM	TTCPM	TVCPM	TWCPM	TYCPM
3	TADPM	TCDPM	TDDPM	TEDPM	TFDPM	TGDPM	THDPM	TIDPM	TKDPM	TLDPM	TMDPM	TNDPM	TPDPM	TQDPM	TRDPM	TSDPM	TTDPM	TVDPM	TWDPM	TYDPM
4	TAEPM	TCEPM	TDEPM	TEEPM	TFEPM	TGEPM	THEPM	TIEPM	TKEPM	TLEPM	TMEPM	TNEPM	TPEPM	TQEPM	TREPM	TSEPM	TTEPM	TVEPM	TWEPM	TYEPM
5	TAFPM	TCFPM	TDFPM	TEFPM	TFFPM	TGFPM	THFPM	TIFPM	TKFPM	TLFPM	TMFPM	TNFPM	TPFPM	TQFPM	TRFPM	TSFPM	TTFPM	TVFPM	TWFPM	TYFPM
6	TAGPM	TCGPM	TDGPM	TEGPM	TFGPM	TGGPM	THGPM	TIGPM	TKGPM	TLGPM	TMGPM	TNGPM	TPGPM	TQGPM	TRGPM	TSGPM	TTGPM	TVGPM	TWGPM	TYGPM
7	TAHPM	TCHPM	TDHPM	TEHPM	TFHPM	TGHPM	THHPM	TIHPM	TKHPM	TLHPM	TMHPM	TNHPM	TPHPM	TQHPM	TRHPM	TSHPM	TTHPM	TVHPM	TWHPM	TYHPM
8	TAIPM	TCIPM	TDIPM	TEIPM	TFIPM	TGIPM	THIPM	TIIPM	TKIPM	TLIPM	TMIPM	TNIPM	TPIPM	TQIPM	TRIPM	TSIPM	TTIPM	TVIPM	TWIPM	TYIPM
9	TAKPM	TCKPM	TDKPM	TEKPM	TFKPM	TGKPM	THKPM	TIKPM	TKKPM	TLKPM	TMKPM	TNKPM	TPKPM	TQKPM	TRKPM	TSKPM	TTKPM	TVKPM	TWKPM	TYKPM
10	TALPM	TCLPM	TDLPM	TELPM	TFLPM	TGLPM	THLPM	TILPM	TKLPM	TLLPM	TMLPM	TNLPM	TPLPM	TQLPM	TRLPM	TSLPM	TTLPM	TVLPM	TWLPM	TYLPM
11	TAMPM	TCMPM	TDMPM	TEMPM	TFMPM	TGMPM	THMPM	TIMPM	TKMPM	TLMPM	TMMPM	TNMPM	TPMPM	TQMPM	TRMPM	TSMPM	TTMPM	TVMPM	TWMPM	TYMPM
12	TANPM	TCNPM	TDNPM	TENPM	TFNPM	TGNPM	THNPM	TINPM	TKNPM	TLNPM	TMNPM	TNNPM	TPNPM	TQNPM	TRNPM	TSNPM	TTNPM	TVNPM	TWNPM	TYNPM
13	TAPPM	TCPPM	TDPPM	TEPPM	TFPPM	TGPPM	THPPM	TIPPM	TKPPM	TLPPM	TMPPM	TNPPM	TPPPM	TQPPM	TRPPM	TSPPM	TTPPM	TVPPM	TWPPM	TYPPM
14	TAQPM	TCQPM	TDQPM	TEQPM	TFQPM	TGQPM	THQPM	TIQPM	TKQPM	TLQPM	TMQPM	TNQPM	TPQPM	TQQPM	TRQPM	TSQPM	TTQPM	TVQPM	TWQPM	TYQPM
15	TARPM	TCRPM	TDRPM	TERPM	TFRPM	TGRPM	THRPM	TIRPM	TKRPM	TLRPM	TMRPM	TNRPM	TPRPM	TQRPM	TRRPM	TSRPM	TTRPM	TVRPM	TWRPM	TYRPM
16	TASPM	TCSPM	TDSPM	TESPM	TFSPM	TGSPM	THSPM	TISPM	TKSPM	TLSPM	TMSPM	TNSPM	TPSPM	TQSPM	TRSPM	TSSPM	TTSPM	TVSPM	TWSPM	TYSPM
17	TATPM	TCTPM	TDTPM	TETPM	TFTPM	TGTPM	THTPM	TITPM	TKTPM	TLTPM	TMTPM	TNTPM	TPTPM	TQTPM	TRTPM	TSTPM	TTTPM	TVTPM	TWTPM	TYTPM
18	TAVPM	TCVPM	TDVPM	TEVPM	TFVPM	TGVPM	THVPM	TIVPM	TKVPM	TLVPM	TMVPM	TNVPM	TPVPM	TQVPM	TRVPM	TSVPM	TTVPM	TVVPM	TWVPM	TYVPM
19	TAWPM	TCWPM	TDWPM	TEWPM	TFWPM	TGWPM	THWPM	TIWPM	TKWPM	TLWPM	TMWPM	TNWPM	TPWPM	TQWPM	TRWPM	TSWPM	TTWPM	TVWPM	TWWPM	TYWPM
20	TAYPM	TCYPM	TDYPM	TEYPM	TFYPM	TGYPM	THYPM	TIYPM	TKYPM	TLYPM	TMYPM	TNYPM	TPYPM	TQYPM	TRYPM	TSYPM	TTYPM	TVYPM	TWYPM	TYYPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S7: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from YPA) and the details of the BIOPEP digestion of the peptides.

NO	Pentapeptides designed from all possible combinations of YPA																				
1	YAAPA	YCAPA	YDAPA	YEAPA	YFAPA	YGAPA	YHAPA	YIAPA	YKAPA	YLAPA	YMAPA	YNAPA	YPAPA	YQAPA	YRAPA	YSAPA	YTAPA	YVAPA	YWAPA	YYAPA	
2	YACPA	YCCPA	YDCPA	YECPA	YFCPA	YGCPA	YHCPA	YICPA	YKCPA	YLCPA	YMCPA	YNCPA	YPCPA	YQCPA	YRCPA	YSCPA	YTCPA	YVCPA	YWCPA	YYCPA	
3	YADPA	YCDPA	YDDPA	YEDPA	YFDPA	YGDPA	YHDPA	YIDPA	YKDPA	YLDPA	YMDPA	YNDPA	YPDPA	YQDPA	YRDPA	YSDPA	YTDPA	YVDPA	YWDPA	YYDPA	
4	YAEPA	YCEPA	YDEPA	YEEPA	YFEPA	YGEPA	YHEPA	YIEPA	YKEPA	YLEPA	YMEPA	YNEPA	YPEPA	YQEPA	YREPA	YSEPA	YTEPA	YVEPA	YWEPA	YYEPA	
5	YAFPA	YCFPA	YDFPA	YEFPA	YFFPA	YGFPA	YHFPA	YIFPA	YKFPA	YLFPA	YMFPA	YNFPA	YPFPA	YQFPA	YRFPA	YSFPA	YTFPA	YVFPA	YWFPA	YYFPA	
6	YAGPA	YCGPA	YDGPA	YEGPA	YFGPA	YGGPA	YHGPA	YIGPA	YKGPA	YLGPA	YMGPA	YNGPA	YPGPA	YQGPA	YRGPA	YSGPA	YTGPA	YVGPA	YWGPA	YYGPA	
7	YAHPA	YCHPA	YDHPA	YEHPA	YFHPA	YGHPA	YHHPA	YIHPA	YKHPA	YLHPA	YMHPA	YNHPA	YPHPA	YQHPA	YRHPA	YSHPA	YTHPA	YVHPA	YWHPA	YYHPA	
8	YAIPA	YCIPA	YDIPA	YEIPA	YFIPA	YGIPA	YHIPA	YIIPA	YKIPA	YLIPA	YMIPA	YNIPA	YPIPA	YQIPA	YRIPA	YSIPA	YTIPA	YVIPA	YWIPA	YYIPA	
9	YAKPA	YCKPA	YDKPA	YEKPA	YFKPA	YGKPA	YHKPA	YIKPA	YKKPA	YLKPA	YMKPA	YNKPA	YPKPA	YQKPA	YRKPA	YSKPA	YTKPA	YVKPA	YWKPA	YYKPA	
10	YALPA	YCLPA	YDLPA	YELPA	YFLPA	YGLPA	YHLPA	YILPA	YKLPA	YLLPA	YMLPA	YNLPA	YPLPA	TQLPA	YRLPA	YSLPA	YTLPA	YVLPA	YWLPA	YYLPA	
11	YAMPA	YCMPA	YDMPA	YEMPA	YFMPA	YGMPA	YHMPA	YIMPA	YKMPA	YLMPA	YMMPA	YNMPA	YPMPA	YQMPA	YRMPA	YSMPA	YTMPA	YVMPA	YWMPA	YYMPA	
12	YANPA	YCNPA	YDNPA	YENPA	YFNPA	YGNPA	YHNPA	YINPA	YKNPA	YLNPA	YMNPA	YNNPA	YPNPA	YQNPA	YRNPA	YSNPA	YTNPA	YVNPA	YWNPA	YYNPA	
13	YAPPA	YCPPA	YDPPA	YEPPA	YFPPA	YGPPA	YHPPA	YIPPA	YKPPA	YLPPA	YMPPA	YNPPA	YPPPA	YQPPA	YRPPA	YSPPA	YTPPA	YVPPA	YWPPA	YYPPA	
14	YAQPA	YCQPA	YDQPA	YEQPA	YFQPA	YGQPA	YHQPA	YIQPA	YKQPA	YLQPA	YMQPA	YNQPA	YPQPA	YQQPA	YRQPA	YSQPA	YTQPA	YVQPA	YWQPA	YYQPA	
15	YARPA	YCRPA	YDRPA	YERPA	YFRPA	YGRPA	YHRPA	YIRPA	YKRPA	YLRPA	YMRPA	YNRPA	YPRPA	YQRPA	YRRPA	YSRPA	YTRPA	YVRPA	YWRPA	YYRPA	
16	YASPA	YCSPA	YDSPA	YESPA	YFSPA	YGSPA	YHSPA	YISPA	YKSPA	YLSPA	YMSPA	YNSPA	YPSPA	YQSPA	YRSPA	YSSPA	YTSPA	YVSPA	YWSPA	YYSPA	
17	YATPA	YCTPA	YDTPA	YETPA	YFTPA	YGTPA	YHTPA	YITPA	YKTPA	YLTPA	YMTPA	YNTPA	YPTPA	YQTPA	YRTPA	YSTPA	YTTPA	YVTPA	YWTPA	YYTPA	
18	YAVPA	YCVPA	YDVPA	YEVPA	YFVPA	YGVPA	YHVPA	YIVPA	YKVPA	YLVPA	YMVPA	YNVPA	YPVPA	YQVPA	YRVPA	YSVPA	YTVPA	YVVPA	YWVPA	YYVPA	
19	YAWPA	YCWPA	YDWPA	YEWPA	YFWPA	YGWPA	YHWPA	YIWPA	YKWPA	YLWPA	YMWPA	YNWPA	YPWPA	YQWPA	YRWPA	YSWPA	YTWPA	YVWPA	YWWPA	YYWPA	
20	YAYPA	YCYPA	YDYPA	YEYPA	YFYPA	YGYPA	YHYPA	YIYPA	YKYPA	YLYPA	YMYPA	YNYPA	YPYPA	YQYPA	YRYPA	YSYPA	YTYPA	YVYPA	YWYPA	YYYPA	

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S8: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from YPM) and the details of the BIOPEP digestion of the peptides

NO	Pentapeptides designed from all possible combinations of YPM																				
1	YAAPM	YCAPM	YDAPM	YEAPM	YFAPM	YGAPM	YHAPM	YIAPM	YKAPM	YLAPM	YMAPM	YNAPM	YPAPM	YQAPM	YRAPM	YSAPM	YTAPM	YVAPM	YWAPM	YYAPM	
2	YACPM	YCCPM	YDCPM	YECPM	YFCPM	YGCPM	YHCPM	YICPM	YKCPM	YLCPM	YMCPM	YNCPM	YPCPM	YQCPM	YRCPM	YSCPM	YTCPM	YVCPM	YWCPM	YYCPM	
3	YADPM	YCDPM	YDDPM	YEDPM	YFDPM	YGDPM	YHDPM	YIDPM	YKDPM	YLDPM	YMDPM	YNDPM	YPDPM	YQDPM	YRDPM	YSDPM	YTDPM	YVDPM	YWDPM	YYDPM	
4	YAEPM	YCEPM	YDEPM	YEEPM	YFEPM	YGEPM	YHEPM	YIEPM	YKEPM	YLEPM	YMEPM	YNEPM	YPEPM	YQEPM	YREPM	YSEPM	YTEPM	YVEPM	YWEPM	YYEPM	
5	YAFPM	YCFPM	YDFPM	YEFPM	YFFPM	YGFPM	YHFPM	YIFPM	YKFPM	YLFPM	YMFPM	YNFPM	YPFPM	YQFPM	YRFPM	YSFPM	YTFPM	YVFPM	YWFPM	YYFPM	
6	YAGPM	YCGPM	YDGPM	YEGPM	YFGPM	YGGPM	YHGPM	YIGPM	YKGPM	YLGPM	YMGPM	YNGPM	YPGPM	YQGPM	YRGPM	YSGPM	YTGPM	YVGPM	YWGPM	YYGPM	
7	YAHPM	YCHPM	YDHPM	YEHPM	YFHPM	YGHPM	YHHPM	YIHPM	YKHPM	YLHPM	YMHPM	YNHPM	YPHPM	YQHPM	YRHPM	YSHPM	YTHPM	YVHPM	YWHPM	YYHPM	
8	YAIPM	YCIPM	YDIPM	YEIPM	YFIPM	YGIPM	YHIPM	YIIPM	YKIPM	YLIPM	YMIPM	YNIPM	YPIPM	YQIPM	YRIPM	YSIPM	YTIPM	YVIPM	YWIPM	YYIPM	
9	YAKPM	YCKPM	YDKPM	YEKPM	YFKPM	YGKPM	YHKPM	YIKPM	YKKPM	YLKPM	YMKPM	YNKPM	YPKPM	YQKPM	YRKPM	YSKPM	YTKPM	YVKPM	YWKPM	YYKPM	
10	YALPM	YCLPM	YDLPM	YELPM	YFLPM	YGLPM	YHLPM	YILPM	YKLPM	YLLPM	YMLPM	YNLPM	YPLPM	YQLPM	YRLPM	YSLPM	YTLPM	YVLPM	YWLPM	YYLPM	
11	YAMPM	YCMPM	YDMPM	YEMPM	YFMPM	YGMPM	YHMPM	YIMPM	YKMPM	YLMPM	YMMPM	YNMPM	YPMPM	YQMPM	YRMPM	YSMPM	YTMPM	YVMPM	YWMPM	YYMPM	
12	YANPM	YCNPM	YDNPM	YENPM	YFNPM	YGNPM	YHNPM	YINPM	YKNPM	YLNPM	YMNPM	YNNPM	YPNPM	YQNPM	YRNPM	YSNPM	YTNPM	YVNPM	YWNPM	YYNPM	
13	YAPPM	YCPPM	YDPPM	YEPPM	YFPPM	YGPPM	YHPPM	YIPPM	YKPPM	YLPPM	YMPPM	YNPPM	YPPPM	YQPPM	YRPPM	YSPPM	YTPPM	YVPPM	YWPPM	YYPPM	
14	YAQPM	YCQPM	YDQPM	YEQPM	YFQPM	YGQPM	YHQPM	YIQPM	YKQPM	YLQPM	YMQPM	YNQPM	YPQPM	YQQPM	YRQPM	YSQPM	YTQPM	YVQPM	YWQPM	YYQPM	
15	YARPM	YCRPM	YDRPM	YERPM	YFRPM	YGRPM	YHRPM	YIRPM	YKRPM	YLRPM	YMRPM	YNRPM	YPRPM	YQRPM	YRRPM	YSRPM	YTRPM	YVRPM	YWRPM	YYRPM	
16	YASPM	YCSPM	YDSPM	YESPM	YFSPM	YGSPM	YHSPM	YISPM	YKSPM	YLSPM	YMSPM	YNSPM	YPSPM	YQSPM	YRSPM	YSSPM	YTSPM	YVSPM	YWSPM	YYSPM	
17	YATPM	YCTPM	YDTPM	YETPM	YFTPM	YGTPM	YHTPM	YITPM	YKTPM	YLTPM	YMTPM	YNTPM	YPTPM	YQTPM	YRTPM	YSTPM	YTTPM	YVTPM	YWTPM	YYTPM	
18	YAVPM	YCVPM	YDVPM	YEVPM	YFVPM	YGVPM	YHVPM	YIVPM	YKVPM	YLVPM	YMVPM	YNVPM	YPVPM	YQVPM	YRVPM	YSVPM	YTVPM	YVVPM	YWVPM	YYVPM	
19	YAWPM	YCWPM	YDWPM	YEWPM	YFWPM	YGWPM	YHWPM	YIWPM	YKWPM	YLWPM	YMWPM	YNWPM	YPWPM	YQWPM	YRWPM	YSWPM	YTWPM	YVWPM	YWWPM	YYWPM	
20	YAYPM	YCYPM	YDYPM	YEYPM	YFYPM	YGYPM	YHYPM	YIYPM	YKYPM	YLYPM	YMYPM	YNYPM	YPYPM	YQYPM	YRYPM	YSYPM	YTYPM	YVYPM	YWYPM	YYYPM	

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S9: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from RPA) and the details of the BIOPEP digestion of the peptides

NO	Pentapeptides designed from all possible combinations of RPA																				
1	RAAPA	RCAPA	RDAPA	REAPA	RFAPA	RGAPA	RHAPA	RIAPA	RKAPA	RLAPA	RMAPA	RNAPA	RPAPA	RQAPA	RRAPA	RSAPA	RTAPA	RVAPA	RWAPA	RYAPA
2	RACPA	RCCPA	RDCPA	RECPA	RFCPA	RGCPA	RHCPA	RICPA	RKCPA	RLCPA	RMCPA	RNCPA	RPCPA	RQCPA	RRCPA	RSCPA	RTCPA	RVCPA	RWCPA	RYCPA
3	RADPA	RCDPA	RDDPA	REDPA	RFDPA	RGDPA	RHDPA	RIDPA	RKDPA	RLDPA	RMDPA	RNDPA	RPDPA	RQDPA	RRDPA	RSDPA	RTDPA	RVDPA	RWDPA	RYDPA
4	RAEPA	RCEPA	RDEPA	REEPA	RFEPA	RGEPA	RHEPA	RIEPA	RKEPA	RLEPA	RMEPA	RNEPA	RPEPA	RQEPA	RREPA	RSEPA	RTEPA	RVEPA	RWEPA	RYEPA
5	RAFPA	RCFPA	RDFPA	REFPA	RFFPA	RGFPA	RHFPA	RIFPA	RKFPA	RLFPA	RMFPA	RNFPA	RPFPA	RQFPA	RRFPA	RSFPA	RTFPA	RVFPA	RWFPA	RYFPA
6	RAGPA	RCGPA	RDGPA	REGPA	RFGPA	RGGPA	RHGPA	RIGPA	RKGPA	RLGPA	RMGPA	RNGPA	RPGPA	RQGPA	RRGPA	RSGPA	RTGPA	RVGPA	RWGPA	RYGPA
7	RAHPA	RCHPA	RDHPA	REHPA	RFHPA	RGHPA	RHHPA	RIHPA	RKHPA	RLHPA	RMHPA	RNHPA	RPHPA	RQHPA	RRHPA	RSHPA	RTHPA	RVHPA	RWHPA	RYHPA
8	RAIPA	RCIPA	RDIPA	REIPA	RFIPA	RGIPA	RHIPA	RIIPA	RKIPA	RLIPA	RMIPA	RNIPA	RPIPA	RQIPA	RRIPA	RSIPA	RTIPA	RVIPA	RWIPA	RYIPA
9	RAKPA	RCKPA	RDKPA	REKPA	RFKPA	RGKPA	RHKPA	RIKPA	RKKPA	RLKPA	RMKPA	RNKPA	RPKPA	RQKPA	RRKPA	RSKPA	RTKPA	RVKPA	RWKPA	RYKPA
10	RALPA	RCLPA	RDLPA	RELPA	RFLPA	RGLPA	RHLPA	RILPA	RKLPA	RLLPA	RMLPA	RNLPA	RPLPA	RQLPA	RRLPA	RSLPA	RTLPA	RVLPA	RWLPA	RYLPA
11	RAMPA	RCMPA	RDMPA	REMPA	RFMPA	RGMPA	RHMPA	RIMPA	RKMPA	RLMPA	RMMPA	RNMPA	RPMPA	RQMPA	RRMPA	RSMPA	RTMPA	RVMPA	RWMPA	RYMPA
12	RANPA	RCNPA	RDNPA	RENPA	RFNPA	RGNPA	RHNPA	RINPA	RKNPA	RLNPA	RMNPA	RNNPA	RPNPA	RQNPA	RRNPA	RSNPA	RTNPA	RVNPA	RWNPA	RYNPA
13	RAPPA	RCPPA	RDPPA	REPPA	RFPPA	RGPPA	RHPPA	RIPPA	RKPPA	RLPPA	RMPPA	RNPPA	RPPPA	RQPPA	RRPPA	RSPPA	RTPPA	RVPPA	RWPPA	RYPPA
14	RAQPA	RCQPA	RDQPA	REQPA	RFQPA	RGQPA	RHQPA	RIQPA	RKQPA	RLQPA	RMQPA	RNQPA	RPQPA	RQQPA	RRQPA	RSQPA	RTQPA	RVQPA	RWQPA	RYQPA
15	RARPA	RCRPA	RDRPA	RERPA	RFRPA	RGRPA	RHRPA	RIRPA	RKRPA	RLRPA	RMRPA	RNRPA	RPRPA	RQRPA	RRRPA	RSRPA	RTRPA	RVRPA	RWRPA	RYRPA
16	RASPA	RCSPA	RDSPA	RESPA	RFSPA	RGSPA	RHSPA	RISPA	RKSPA	RLSPA	RMSPA	RNSPA	RPSPA	RQSPA	RRSPA	RSSPA	RTSPA	RVSPA	RWSPA	RYSPA
17	RATPA	RCTPA	RDTPA	RETPA	RFTPA	RGTPA	RHTPA	RITPA	RKTPA	RLTPA	RMTPA	RNTPA	RPTPA	RQTPA	RRTPA	RSTPA	RTTPA	RVTPA	RWTPA	RYTPA
18	RAVPA	RCVPA	RDVPA	REVPA	RFVPA	RGVPA	RHVPA	RIVPA	RKVPA	RLVPA	RMVPA	RNVPA	RPVPA	RQVPA	RRVPA	RSVPA	RTVPA	RVVPA	RWVPA	RYVPA
19	RAWPA	RCWPA	RDWPA	REWPA	RFWPA	RGWPA	RHWPA	RIWPA	RKWPA	RLWPA	RMWPA	RNWPA	RPWPA	RQWPA	RRWPA	RSWPA	RTWPA	RVWPA	RWWPA	RYWPA
20	RAYPA	RCYPA	RDYPA	REYPA	RFYPA	RGYPA	RHYPA	RIYPA	RKYPA	RLYPA	RMYPA	RNYPA	RPYPA	RQYPA	RRYPA	RSYPA	RTYPA	RVYPA	RWYPA	RYYPA

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S10: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from RPM) and the details of the BIOPEP digestion of the peptides

NO	Pentapeptides designed from all possible combinations of RPM																				
1	RAAPM	RCAPM	RDAPM	REAPM	RFAPM	RGAPM	RHAPM	RIAPM	RKAPM	RLAPM	RMAPM	RNAPM	RPAPM	RQAPM	RRAPM	RSAPM	RTAPM	RVAPM	RWAPM	RYAPM
2	RACPM	RCCPM	RDCPM	RECPM	RFCPM	RGCPM	RHCPM	RICPM	RKCPM	RLCPM	RMCPM	RNCPM	RPCPM	RQCPM	RRCPM	RSCPM	RTCPM	RVCPM	RWCPM	RYCPM
3	RADPM	RCDPM	RDDPM	REDPM	RFDPM	RGDPM	RHDPM	RIDPM	RKDPM	RLDPM	RMDPM	RNDPM	RPDPM	RQDPM	RRDPM	RSDPM	RTDPM	RVDPM	RWDPM	RYDPM
4	RAEPM	RCEPM	RDEPM	REEPM	RFEPM	RGEPM	RHEPM	RIEPM	RKEPM	RLEPM	RMEPM	RNEPM	RPEPM	RQEPM	RREPM	RSEPM	RTEPM	RVEPM	RWEPM	RYEPM
5	RAFPM	RCFPM	RDFPM	REFPM	RFFPM	RGFPM	RHFPM	RIFPM	RKFPM	RLFPM	RMFPM	RNFPM	RPFPM	RQFPM	RRFPM	RSFPM	RTFPM	RVFPM	RWFPM	RYFPM
6	RAGPM	RCGPM	RDGPM	REGPM	RFGPM	RGGPM	RHGPM	RIGPM	RKGPM	RLGPM	RMGPM	RNGPM	RPGPM	RQGPM	RRGPM	RSGPM	RTGPM	RVGPM	RWGPM	RYGPM
7	RAHPM	RCHPM	RDHPM	REHPM	RFHPM	RGHPM	RHHPM	RIHPM	RKHPM	RLHPM	RMHPM	RNHPM	RPHPM	RQHPM	RRHPM	RSHPM	RTHPM	RVHPM	RWHPM	RYHPM
8	RAIPM	RCIPM	RDIPM	REIPM	RFIPM	RGIPM	RHIPM	RIIPM	RKIPM	RLIPM	RMIPM	RNIPM	RPIPM	RQIPM	RRIPM	RSIPM	RTIPM	RVIPM	RWIPM	RYIPM
9	RAKPM	RCKPM	RDKPM	REKPM	RFKPM	RGKPM	RHKPM	RIKPM	RKKPM	RLKPM	RMKPM	RNKPM	RPKPM	RQKPM	RRKPM	RSKPM	RTKPM	RVKPM	RWKPM	RYKPM
10	RALPM	RCLPM	RDLPM	RELPM	RFLPM	RGLPM	RHLPM	RILPM	RKLPM	RLLPM	RMLPM	RNLPM	RPLPM	RQLPM	RRLPM	RSLPM	RTLPM	RVLPM	RWLPM	RYLPM
11	RAMPM	RCMPM	RDMPM	REMPM	RFMPM	RGMPM	RHMPM	RIMPM	RKMPM	RLMPM	RMMPM	RNMPM	RPMPM	RQMPM	RRMPM	RSMPM	RTMPM	RVMPM	RWMPM	RYMPM
12	RANPM	RCNPM	RDNPM	RENPM	RFNPM	RGNPM	RHNPM	RINPM	RKNPM	RLNPM	RMNPM	RNNPM	RPNPM	RQNPM	RRNPM	RSNPM	RTNPM	RVNPM	RWNPM	RYNPM
13	RAPPM	RCPPM	RDPPM	REPPM	RFPPM	RGPPM	RHPPM	RIPPM	RKPPM	RLPPM	RMPPM	RNPPM	RPPPM	RQPPM	RRPPM	RSPPM	RTPPM	RVPPM	RWPPM	RYPPM
14	RAQPM	RCQPM	RDQPM	REQPM	RFQPM	RGQPM	RHQPM	RIQPM	RKQPM	RLQPM	RMQPM	RNQPM	RPQPM	RQQPM	RRQPM	RSQPM	RTQPM	RVQPM	RWQPM	RYQPM
15	RARPM	RCRPM	RDRPM	RERPM	RFRPM	RGRPM	RHRPM	RIRPM	RKRPM	RLRPM	RMRPM	RNRPM	RPRPM	RQRPM	RRRPM	RSRPM	RTRPM	RVRPM	RWRPM	RYRPM
16	RASPM	RCSPM	RDSPM	RESPM	RFSPM	RGSPM	RHSPM	RISPM	RKSPM	RLSPM	RMSPM	RNSPM	RPSPM	RQSPM	RRSPM	RSSPM	RTSPM	RVSPM	RWSPM	RYSPM
17	RATPM	RCTPM	RDTPM	RETPM	RFTPM	RGTPM	RHTPM	RITPM	RKTPM	RLTPM	RMTPM	RNTPM	RPTPM	RQTPM	RRTPM	RSTPM	RTTPM	RVTPM	RWTPM	RYTPM
18	RAVPM	RCVPM	RDVPM	REVPM	RFVPM	RGVPM	RHVPM	RIVPM	RKVPM	RLVPM	RMVPM	RNVPM	RPVPM	RQVPM	RRVPM	RSVPM	RTVPM	RVVPM	RWVPM	RYVPM
19	RAWPM	RCWPM	RDWPM	REWPM	RFWPM	RGWPM	RHWPM	RIWPM	RKWPM	RLWPM	RMWPM	RNWPM	RPWPM	RQWPM	RRWPM	RSWPM	RTWPM	RVWPM	RWWPM	RYWPM
20	RAYPM	RCYPM	RDYPM	REYPM	RFYPM	RGYPM	RHYPM	RIYPM	RKYPM	RLYPM	RMYPM	RNYPM	RPYPM	RQYPM	RRYPM	RSYPM	RTYPM	RVYPM	RWYPM	RYYPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S11: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from KPA) and the details of the BIOPEP digestion of the peptides

NO	Pentapeptides designed from all possible combinations of KPA																			
1	KAAPA	KCAPA	KDAPA	KEAPA	KFAPA	KGAPA	KHAPA	KIAPA	KKAPA	KLAPA	KMAPA	KNAPA	KPAPA	KQAPA	KRAPA	KSAPA	KTAPA	KVAPA	KWAPA	KYAPA
2	KACPA	KCCPA	KDCPA	KECPA	KFCPA	KGCPA	KHCPA	KICPA	KKCPA	KLCPA	KMCPA	KNCPA	KPCPA	KQCPA	KRCPA	KSCPA	KTCPA	KVCPA	KWCPA	KYCPA
3	KADPA	KCDPA	KDDPA	KEDPA	KFDPA	KGDPA	KHDPA	KIDPA	KKDPA	KLDPA	KMDPA	KNDPA	KPDPA	KQDPA	KRDPA	KSDPA	KTDPA	KVDPA	KWDPA	KYDPA
4	KAEPA	KCEPA	KDEPA	KEEPA	KFEPA	KGEPA	KHEPA	KIEPA	KKEPA	KLEPA	KMEPA	KNEPA	KPEPA	KQEPA	KREPA	KSEPA	KTEPA	KVEPA	KWEPA	KYEPA
5	KAFPA	KCFPA	KDFPA	KEFPA	KFFPA	KGFPA	KHFPA	KIFPA	KKFPA	KLFPA	KMFPA	KNFPA	KPFPA	KQFPA	KRFPA	KSFPA	KTFPA	KVFPA	KWFPA	KYFPA
6	KAGPA	KCGPA	KDGPA	KEGPA	KFGPA	KGGPA	KHGPA	KIGPA	KKGPA	KLGPA	KMGPA	KNGPA	KPGPA	KQGPA	KRGPA	KSGPA	KTGPA	KVGPA	KWGPA	KYGPA
7	KAHPA	KCHPA	KDHPA	KEHPA	KFHPA	KGHPA	KHHPA	KIHPA	KKHPA	KLHPA	KMHPA	KNHPA	KPHPA	KQHPA	KRHPA	KSHPA	KTHPA	KVHPA	KWHPA	KYHPA
8	KAIPA	KCIPA	KDIPA	KEIPA	KFIPA	KGIPA	KHIPA	KIIPA	KKIPA	KLIPA	KMIPA	KNIPA	KPIPA	KQIPA	KRIPA	KSIPA	KTIPA	KVIPA	KWIPA	KYIPA
9	KAKPA	KCKPA	KDKPA	KEKPA	KFKPA	KGKPA	KHKPA	KIKPA	KKKPA	KLKPA	KMKPA	KNKPA	KPKPA	KQKPA	KRKPA	KSKPA	KTKPA	KVKPA	KWKPA	KYKPA
10	KALPA	KCLPA	KDLPA	KELPA	KFLPA	KGLPA	KHLPA	KILPA	KKLPA	KLLPA	KMLPA	KNLPA	KPLPA	KQLPA	KRLPA	KSLPA	KTLPA	KVLPA	KWLPA	KYLPA
11	KAMPA	KCMPA	KDMPA	KEMPA	KFMPA	KGMPA	KHMPA	KIMPA	KKMPA	KLMPA	KMMPA	KNMPA	KPMPA	KQMPA	KRMPA	KSMPA	KTMPA	KVMPA	KWMPA	KYMPA
12	KANPA	KCNPA	KDNPA	KENPA	KFNPA	KGNPA	KHNPA	KINPA	KKNPA	KLNPA	KMNPA	KNNPA	KPNPA	KQNPA	KRNPA	KSNPA	KTNPA	KVNPA	KWNPA	KYNPA
13	KAPPA	KCPPA	KDPPA	KEPPA	KFPPA	KGPPA	KHPPA	KIPPA	KKPPA	KLPPA	KMPPA	KNPPA	KPPPA	KQPPA	KRPPA	KSPPA	KTPPA	KVPPA	KWPPA	KYPPA
14	KAQPA	KCQPA	KDQPA	KEQPA	KFQPA	KGQPA	KHQPA	KIQPA	KKQPA	KLQPA	KMQPA	KNQPA	KPQPA	KQQPA	KRQPA	KSQPA	KTQPA	KVQPA	KWQPA	KYQPA
15	KARPA	KCRPA	KDRPA	KERPA	KFRPA	KGRPA	KHRPA	KIRPA	KKRPA	KLRPA	KMRPA	KNRPA	KPRPA	KQRPA	KRRPA	KSRPA	KTRPA	KVRPA	KWRPA	KYRPA
16	KASPA	KCSPA	KDSPA	KESPA	KFSPA	KGSPA	KHSPA	KISPA	KKSPA	KLSPA	KMSPA	KNSPA	KPSPA	KQSPA	KRSPA	KSSPA	KTSPA	KVSPA	KWSPA	KYSPA
17	KATPA	KCTPA	KDTPA	KETPA	KFTPA	KGTPA	KHTPA	KITPA	KKTPA	KLTPA	KMTPA	KNTPA	KPTPA	KQTPA	KRTPA	KSTPA	KTTPA	KVTPA	KWTPA	KYTPA
18	KAVPA	KCVPA	KDVPA	KEVPA	KFVPA	KGVPA	KHVPA	KIVPA	KKVPA	KLVPA	KMVPA	KNVPA	KPVPA	KQVPA	KRVPA	KSVPA	KTVPA	KVVPA	KWVPA	KYVPA
19	KAWPA	KCWPA	KDWPA	KEWPA	KFWPA	KGWPA	KHWPA	KIWPA	KKWPA	KLWPA	KMWPA	KNWPA	KPWPA	KQWPA	KRWPA	KSWPA	KTWPA	KVWPA	KWWPA	KYWPA
20	KAYPA	KCYPA	KDYPA	KEYPA	KFYPA	KGYPA	KHYPA	KIYPA	KKYPA	KLYPA	KMYPA	KNYPA	KPYPA	KQYPA	KRYPA	KSYPA	KTYPA	KVYPA	KWYPA	KYYPA

All peptides with red highlights are hydrolysed during the BIOPEP digestion

Table S12: The 400 pentapeptide library of the designed α-glucosidase inhibitory peptides (from KPM) and the details of the BIOPEP digestion of the peptides

NO	Pentapeptides designed from all possible combinations of KPM																			
1	KAAPM	KCAPM	KDAPM	KEAPM	KFAPM	KGAPM	KHAPM	KIAPM	KKAPM	KLAPM	KMAPM	KNAPM	KPAPM	KQAPM	KRAPM	KSAPM	KTAPM	KVAPM	KWAPM	KYAPM
2	KACPM	KCCPM	KDCPM	KECPM	KFCPM	KGCPM	KHCPM	KICPM	KKCPM	KLCPM	KMCPM	KNCPM	KPCPM	KQCPM	KRCPM	KSCPM	KTCPM	KVCPM	KWCPM	KYCPM
3	KADPM	KCDPM	KDDPM	KEDPM	KFDPM	KGDPM	KHDPM	KIDPM	KKDPM	KLDPM	KMDPM	KNDPM	KPDPM	KQDPM	KRDPM	KSDPM	KTDPM	KVDPM	KWDPM	KYDPM
4	KAEPM	KCEPM	KDEPM	KEEPM	KFEPM	KGEPM	KHEPM	KIEPM	KKEPM	KLEPM	KMEPM	KNEPM	KPEPM	KQEPM	KREPM	KSEPM	KTEPM	KVEPM	KWEPM	KYEPM
5	KAFPM	KCFPM	KDFPM	KEFPM	KFFPM	KGFPM	KHFPM	KIFPM	KKFPM	KLFPM	KMFPM	KNFPM	KPFPM	KQFPM	KRFPM	KSFPM	KTFPM	KVFPM	KWFPM	KYFPM
6	KAGPM	KCGPM	KDGPM	KEGPM	KFGPM	KGGPM	KHGPM	KIGPM	KKGPM	KLGPM	KMGPM	KNGPM	KPGPM	KQGPM	KRGPM	KSGPM	KTGPM	KVGPM	KWGPM	KYGPM
7	KAHPM	KCHPM	KDHPM	KEHPM	KFHPM	KGHPM	KHHPM	KIHPM	KKHPM	KLHPM	KMHPM	KNHPM	KPHPM	KQHPM	KRHPM	KSHPM	KTHPM	KVHPM	KWHPM	KYHPM
8	KAIPM	KCIPM	KDIPM	KEIPM	KFIPM	KGIPM	KHIPM	KIIPM	KKIPM	KLIPM	KMIPM	KNIPM	KPIPM	KQIPM	KRIPM	KSIPM	KTIPM	KVIPM	KWIPM	KYIPM
9	KAKPM	KCKPM	KDKPM	KEKPM	KFKPM	KGKPM	KHKPM	KIKPM	KKKPM	KLKPM	KMKPM	KNKPM	KPKPM	KQKPM	KRKPM	KSKPM	KTKPM	KVKPM	KWKPM	KYKPM
10	KALPM	KCLPM	KDLPM	KELPM	KFLPM	KGLPM	KHLPM	KILPM	KKLPM	KLLPM	KMLPM	KNLPM	KPLPM	KQLPM	KRLPM	KSLPM	KTLPM	KVLPM	KWLPM	KYLPM
11	KAMPM	KCMPM	KDMPM	KEMPM	KFMPM	KGMPM	KHMPM	KIMPM	KKMPM	KLMPM	KMMPM	KNMPM	KPMPM	KQMPM	KRMPM	KSMPM	KTMPM	KVMPM	KWMPM	KYMPM
12	KANPM	KCNPM	KDNPM	KENPM	KFNPM	KGNPM	KHNPM	KINPM	KKNPM	KLNPM	KMNPM	KNNPM	KPNPM	KQNPM	KRNPM	KSNPM	KTNPM	KVNPM	KWNPM	KYNPM
13	KAPPM	KCPPM	KDPPM	KEPPM	KFPPM	KGPPM	KHPPM	KIPPM	KKPPM	KLPPM	KMPPM	KNPPM	KPPPM	KQPPM	KRPPM	KSPPM	KTPPM	KVPPM	KWPPM	KYPPM
14	KAQPM	KCQPM	KDQPM	KEQPM	KFQPM	KGQPM	KHQPM	KIQPM	KKQPM	KLQPM	KMQPM	KNQPM	KPQPM	KQQPM	KRQPM	KSQPM	KTQPM	KVQPM	KWQPM	KYQPM
15	KARPM	KCRPM	KDRPM	KERPM	KFRPM	KGRPM	KHRPM	KIRPM	KKRPM	KLRPM	KMRPM	KNRPM	KPRPM	KQRPM	KRRPM	KSRPM	KTRPM	KVRPM	KWRPM	KYRPM
16	KASPM	KCSPM	KDSPM	KESPM	KFSPM	KGSPM	KHSPM	KISPM	KKSPM	KLSPM	KMSPM	KNSPM	KPSPM	KQSPM	KRSPM	KSSPM	KTSPM	KVSPM	KWSPM	KYSPM
17	KATPM	KCTPM	KDTPM	KETPM	KFTPM	KGTPM	KHTPM	KITPM	KKTPM	KLTPM	KMTPM	KNTPM	KPTPM	KQTPM	KRTPM	KSTPM	KTTPM	KVTPM	KWTPM	KYTPM
18	KAVPM	KCVPM	KDVPM	KEVPM	KFVPM	KGVPM	KHVPM	KIVPM	KKVPM	KLVPM	KMVPM	KNVPM	KPVPM	KQVPM	KRVPM	KSVPM	KTVPM	KVVPM	KWVPM	KYVPM
19	KAWPM	KCWPM	KDWPM	KEWPM	KFWPM	KGWPM	KHWPM	KIWPM	KKWPM	KLWPM	KMWPM	KNWPM	KPWPM	KQWPM	KRWPM	KSWPM	KTWPM	KVWPM	KWWPM	KYWPM
20	KAYPM	KCYPM	KDYPM	KEYPM	KFYPM	KGYPM	KHYPM	KIYPM	KKYPM	KLYPM	KMYPM	KNYPM	KPYPM	KQYPM	KRYPM	KSYPM	KTYPM	KVYPM	KWYPM	KYYPM

All peptides with red highlights are hydrolysed during the BIOPEP digestion