

Р†РЃРЎРЎР РЈРЉРІР†РІ

**РrP»CИ РjPμPṛPēC‡PSPsPiPs P·P°CÍC,PsCÍCṛPIP°PSPSCИ P»C-PeP°CḡCÍCHPePsPiPs
P·P°CÍPsP±Cṛ**

РjPμPjPsPeCÍ 10

(MEMPhX 10)

РjPμPjPsPeCÍ 20

(MEMPhX 20)

PŸPeP»P°Pr:

PrC-CHC‡P° CḡPμC‡PsPIPēPSP°: PjPμPjP°PSC,PēPS;

1 C,P°P±P»PμC,PeP° PjC-CÍC,PēC,CH PjPμPjP°PSC,PēPSCṛ PiC-PrCḡPsC...P»PsCḡPēPrCṛ 10 PjPi
P°P±Ps 20 PjPi;

*PrPsPiPsPjC-PḡPSC- CḡPμC‡PsPIPēPSPē: P»P°PeC,PsP·Pē PjPsPSPsPiC-PrCḡP°C,,
C‡PμP»CHP»PsP·P° PjC-PeCḡPsPeCḡPēCÍC,P°P»C-C‡PSP°, C,P°P»CHPe, PeCḡPμPjPSC-CH
PrC-PsPeCÍPēPr PePsP»PsC—PrPSPēPNᓃ P±PμP·PIPsPrPSPēPNᓃ, PjP°PiPSC-CH CÍC,PμP°CḡP°C,;*

*CÍCḡPjC-C€ PrP»CИ PīP»C-PIPePsPIPsPiPs PīPsPeCḡPēC,C,CИ: P»P°PeC,PsP·Pē
PjPsPSPsPiC-PrCḡP°C,, PiC-PiCḡPsPjPμP»PsP·P°, C,PēC,P°PSCṛ PrC-PsPeCÍPēPr (E 171),
PīPsP»C-PμC,PēP»PμPSPiP»C-PePsP»CH 4000 (PjP°PeCḡPsPiPsP»), PrP»CИ C,P°P±P»PμC,PsPe
20 PjPi: P·P°P»C-P·P° PsPeCÍPēPr PḡPsPIC,PēPNᓃ (E 172), P·P°P»C-P·P° PsPeCÍPēPr
C‡PμCḡPIPsPSPēPNᓃ (E 172).*

P·C-PeP°CḡCÍCHPeP° C,,PsCḡPjP°. PŸP°P±P»PμC,PePē, PIPeCḡPēC,C-
PīP»C-PIPePsPIPsCH PsP±PsP»PsPSPePsCH.

PhCÍPSPsPIPsC- C,,C-P·PēPePs-C...C-PjC-C‡PSC- PIP»P°CÍC,PēPIPsCÍC,C-:

В«РђРμРjPsPeCÍ 10B»: C,P°P±P»PμC,PePē PeCḡCṛPiP»PsC— C,,PsCḡPjPē P·
PrPIPsPsPīCṛPeP»PsCH PīPsPIPμCḡC...PSPμCH, PIPeCḡPēC,C- PsP±PsP»PsPSPePsCH
P±C-P»PsPiPs PePsP»CHPsCḡCṛ, P· PiCḡP°PIC-CḡCṛPIP°PSPSCИPj B«M9MNB» C- B«10B» P·
PsPrPSPsPiPs P±PsPeCṛ C- CḡPēCÍPePsCH вḡ” P· C-PSC€PsPiPs;

В«РђРμРjPsPeCÍ 20B»: C,P°P±P»PμC,PePē PsPIP°P»CHPsPSC— C,,PsCḡPjPē P·
PrPIPsPsPīCṛPeP»PsCH PīPsPIPμCḡC...PSPμCH, PIPeCḡPēC,C- PsP±PsP»PsPSPePsCH
C‡PμCḡPIPsPSPs-PePsCḡPēC‡PSPμPIPsPiPs PePsP»CHPsCḡCṛ, P· PiCḡP°PIC-CḡCṛPIP°PSPSCИPj
B«M9MN 20B» P· PsPrPSPsPiPs P±PsPeCṛ C- CḡPēCÍPePsCH вḡ” P· C-PSC€PsPiPs.

$$P'C-PsC,C\bar{H}P^{\circ}PSC\bar{I}'C,,PsC\bar{H}PjP^{\circ}C\bar{I}C-C\bar{I}.$$

P'P»PëP·CHPePs 80 % C†PëCĤPeCfP»CĤCĤC†PëC... PI PsCĤPiP°PSC-P·PjC- P»CĤPrPëPSPë
CĤPiPsCĤC-PrPSPµPSPëC... P· PjPµPjP°PSC,PëPSPsPj PiC-PrCĤPsC...P»PsCĤPëPrPsPj
CĤPiPsP»CfPe PiCĤPëCĤCfC,PSC- Cf PIPëPiP»CĤPrC- PiPsC†P°C,PePsPIPsC—
CĤPµC†PsPIPëPSPë. PhCĤPSPsPIPsPëPjPë PjPµC,P°P±PsP»C-C,P°PjPë PI P»CĤPrPëPSPë
C''B B B B B B B B B

B N-3,5-PrPëPjPµC,PëP»-PiP»CfPrP°PSC,P°PS, C-P·PsPjPµCĤPSP° CĤCfPjC-C€ 4- C- 6-
PiC-PrCĤPsPeCĤPëPjPµPjP°PSC,PëPSCf, P° C,P°PePsP¶ 1-PSC-C,CĤPsP·Ps-B B B B B B

3,5-PrPëPjPµC,PëP»P°PrP°PjP°PSC,P°PS. P-PsPrPµPS C-P· C†PëC... PjPµC,P°P±PsP»C-C,C-PI
PSPµ PiCĤPsCĤPIP»CĤC'' P°PSC,P°PiPsPSC-CĤC,PëC†PSPsC— PrC-C— PIC-PrPSPsCĤPSPs
NMDA-CĤPµC†PµPiC,PsCĤC-PI. PjC†P°CĤC,C- C†PëC,PsC...CĤPsPjCf P 450 Cf
PjPµC,P°P±PsP»C-P·PjC- *in vitro* PSPµ PIPëCĤPIP»PµPSPs. Pj PrPsCĤP»C-PrP¶PµPSPSC- PiCĤPë
PiPµCĤPsCĤP°P»CHPSPsPjCf P·P°CĤC,PsCĤCfPIP°PSPSC- ¹⁴C-PjPµPjP°PSC,PëPSCf PI
CĤPµCĤPµPrPSCĤPsPjCf 84 % PrPsP·Pë P±CfP»Ps PµP»C-PjC-PSPsPIP°PSPs PiCĤPsC,CĤPiPsPj
20 PrPSC-PI, P±C-P»CHC€Pµ 99 % PrPsP·Pë P±CfP»Ps PIPëPiPµPrPµPSPs PSPëCĤPeP°PjPë.

P·P»C-PjC-PSP°C†C-CĤ.

PĤPµPjP°PSC,PëPS PµP»C-PjC-PSCfC''C,CHCĤCĤ P·P° PeCĤPëPIPsCĤ
PjPsPSPsPµPeCĤPiPsPSPµPSC†C-P°P»CHPSPsC— P·P°P»PµP¶PSPsCĤC,C- C-P·
PiCĤPsPjC-P¶PePsPj t_{1/2} PiPµCĤC-PsPr PSP°PiC-PIPIPëPiPµPrPµPSPSCĤ PIC-Pr 60 PrPs 100
PiPsPrPëPS. Pj P»CĤPrPµPNë P· PSPsCĤPjP°P»CHPSPsCĤ C,,CfPSPeC†C-C''CĤ PSPëCĤPsPe
P·P°PiP°P»CHPSPëPNë PeP»C-CĤPµPSCĤ (Cl_{tot}) CĤC,P°PSPsPIPëC,CH 170 PjP»/C...PI/1,73 Pj².
PĤPëCĤPePsPIP° CĤC,P°PrC-CĤ C,,P°CĤPjP°PePsPeC-PSPµC,PëPePë PjPµPjP°PSC,PëPSCf
PIPeP»CHC†P°C'' C,P°PePsP¶ PeP°PSP°P»CHC†PµPICf CĤPµP°P±CĤPsCĤP±C†C-CĤ.

PëPIPëPrPeC-CĤC,CH PSPëCĤPePsPIPsC— PµP»C-PjC-PSP°C†C-C— PjPµPjP°PSC,PëPSCf PI
CfPjPsPIP°C... P»CfP¶PSPsC— CĤPµP°PeC†C-C— CĤPµC†C- PjPsP¶Pµ P·PSPëP¶CfPIP°C,PëCĤCĤ
Cf 7-9 CĤP°P·C-PI. PhP»CfP¶PSPµPSPSCĤ CĤPµC†C- PjPsP¶Pµ PIC-PrP±CfPIP°C,PëCĤCĤ Cf
CĤPµP·CfP»CHC,P°C,C- CĤCfC,C,C''PIPëC... P·PjC-PS PrC-C''C,Pë, PSP°PiCĤPëPeP»P°Pr
P·P°PjC-PSPë P±P°PiP°C,PsPiPs PSP° PjBĤ™ CĤCĤPSC- CĤC,CĤP°PIPë CĤP°C†C-PsPSCf
PIPµPiPµC,P°CĤC-P°PSCĤCHPePëPj P°P±Ps PIPSP°CĤP»C-PrPsPe C-PSC,PµPSCĤPëPIPsPiPs
PiCĤPëPNëPsPjCf P°PSC,P°C†PëPrPSPëC... C€P»CfPSPePsPIPëC... P·P°CĤPsP±C-PI.

P>C-PSC-PNëPSC-CĤC,CH.

PαP°CĤPjP°PePsPeC-PSPµC,PëPeP° PjP°C'' P»C-PSC-PNëPSPëPNë C...P°CĤP°PeC,PµCĤ Cf
PrC-P°PiP°P·PsPSC- PrPsP· 10-40 PjPi.

*PαP°CĤPjP°PePsPrPëPSP°PjC-C†PSPëPNë/C,,P°CĤPjP°PePsPeC-PSPµC,PëC†PSPëPNë
P·PIBĤ™ CĤP·PsPe.*

PµCĤPë PrPsP·C- PjPµPjP°PSC,PëPSCf 20 PjPi PSP° PrPsP±Cf CĤC-PIPµPSCĤ PIPjC-CĤC,Cf Cf
C†PµCĤPµP±CĤPsCĤPiC-PSP°P»CHPSC-PNë CĤC-PrPëPSC- PIC-PrPiPsPIC-PrP°C''
PIPµP»PëC†PëPSC- k_i (PePsPSCĤC,P°PSC,P° PiP°P»CHPjCfPIP°PSPSCĤ) PjPµPjP°PSC,PëPSCf,
C%Ps CĤC,P°PSPsPIPëC,CH 0,5 PjPePjPsP»CH Cf PrC-P»CĤPSC†C- C,,CĤPsPSC,P°P»CHPSPsC—
PePsCĤPë PiPsP»PsPIPsPiPs PjPsP·PeCf P»CĤPrPëPSPë.

PљP»C-PSC-C†PSC- C...P°CĤP°PeC,PµCĤPëCĤC,PëPePë.

PuPsPeP°P·P°PSPSCII.

PΓPIPsCḡPsP±P° PhP»CHC†PiPμPNḡPjPμCḡP° PIC-Pr P»PμPiPePsPiPs CΓC,CrPiPμPSCII PrPs C,CIIΠPePëC... C,,PsCḡPj.

PuCḡPsC,PëPiPsPeP°P·P°PSPSCII.

P“C-PiPμCḡC†CrC,P»PëPIC-CΓC,CH PrPs PrC-CHC†PsC— CḡPμC†PsPIPëPSPë P°P±Ps PrPs P±CrPrCH-CIIΠPePsPiPs PePsPjPiPsPSPμPSC,P° PiCḡPμPiP°CḡP°C,Cr.

P'P·P°C" PjPsPrC-CII P· C-PSC€PëPjPë P»C-PeP°CḡCΓCHPePëPjPë P·P°CΓPsP±P°PjPë C,P° C-PSC€C- PIPëPrPë PIP·P°C" PjPsPrC-PNḡ.

P— PsPiP»CIIΠPrCr PSP° C,,P°CḡPjP°PePsP»PsPiC-C†PSC- PμC,,PμPeC,Pë C,P° PjPμC...P°PSC-P·Pj PrC-C— PjPμPjP°PSC,PëPSCr PiC-PrCḡPsC...P»PsCḡPëPrCr PjPsPΓCrC,CH CΓPiPsCΓC,PμCḡC-PiP°C,PëCΓCII PSP°CΓC,CrPiPSC- CḡPμP°PeC†C-C— PIP·P°C" PjPsPrC-C—:

-B CΓP»C-Pr CrPSPëPeP°C,Pë PsPrPSPsC†P°CΓPSPsPiPs P·P°CΓC,PsCΓCrPIP°PSPSCII PjPμPjP°PSC,PëPSCr C,P° P°PjP°PSC,P°PrPëPSCr C†PμCḡPμP· CḡPëP·PëPe C,,P°CḡPjP°PePsC,PsPeCΓPëC†PSPsPiPs PiCΓPëC...PsP·Cr. PhP±PëPrPIC- CΓPiPsP»CrPePë C" C...C-PjC-C†PSPs PiPsPiBḡ™ CIIΠ·P°PSPëPjPë NMDA-P°PSC,P°PiPsPSC-CΓC,P°PjPë. PŷPμ PΓ CΓP°PjPμ PjPsPΓPμ CΓC,PsCΓCrPIP°C,PëCΓCII PePμC,P°PjC-PSCr C- PrPμPeCΓC,CḡPsPjPμC,PsCḡC,,P°PSCr. P' PsPrPSPsPjCr PsPiCrP±P»C-PePsPIP°PSPsPjCr P·PIC-C,C- P·P°P·PSP°C†P°P»PsCΓCII C,P°PePsPΓ PiCḡPs PjPsPΓP»PëPIPëPNḡ CḡPëP·PëPe PePsPjP±C-PSP°C†C-C— PjPμPjP°PSC,PëPSCr PNḡ C,,PμPSC-C,PsC—PSCr;

- PjPμC...P°PSC-P·Pj PrC-C— PiPμCḡPμPrP±P°C†P°C" PjPsPΓP»PëPIPμ PiPsCΓPëP»PμPSPSCII PμC,,PμPeC,C-PI L-PrPsPiP°, PrPsPiP°PjC-PSPμCḡPiC-C†PSPëC... P°PiPsPSC-CΓC,C-PI C,P° P°PSC,PëC...PsP»C-PSPμCḡPiC-C†PSPëC... P·P°CΓPsP±C-PI PiCḡPë PsPrPSPsC†P°CΓPSPsPjCr P·P°CΓC,PsCΓCrPIP°PSPSC- C,P°PePëC... NMDA-P°PSC,P°PiPsPSC-CΓC,C-PI, CIIΠPe PjPμPjP°PSC,PëPS. PḡPsPΓP»PëPIPμ PiPsCΓP»P°P±P»PμPSPSCII PμC,,PμPeC,C-PI P±P°CḡP±C-C,CrCḡP°C,C-PI C,P° PSPμPNḡCḡPsP»PμPiC,PëC†PSPëC... P·P°CΓPsP±C-PI. PŷCrPjC-CΓPSPμ PiCḡPëP·PSP°C†PμPSPSCII PjPμPjP°PSC,PëPSCr C,P° CΓPiP°P·PjPsP»C-C,PëC†PSPëC... P·P°CΓPsP±C-PI, PrP°PSC,CḡPsP»PμPSCr P°P±Ps P±P°PeP»PsC,,PμPSCr PjPsPΓPμ PjPsPrPëC,,C-PeCrPIP°C,Pë C—C... PμC,,PμPeC,Pë, C%Ps PjPsPΓPμ PsP±CrPjPsPIPëC,Pë PSPμPsP±C...C-PrPSC-CΓC,CH PePsCḡPμPeC†C-C— PrPsP·;

-B C-PSC€C- P»C-PeP°CḡCΓCHPeC- P·P°CΓPsP±Pë, C,P°PeC- CIIΠPe C†PëPjPμC,PëPrPëPS, CḡP°PSC-C,PëPrPëPS, PiCḡPsPeP°C—PSP°PjC-Pr, C...C-PSC-PrPëPS, C...C-PSC-PS C,P° PSC-PePsC,PëPS, CIIΠPeC- PIPëPePsCḡPëCΓC,PsPICrCḡC,CH C,Cr PΓ PeP°C,C-PsPSPSCr C,CḡP°PSCΓPiPsCḡC,PSCr CΓPëCΓC,PμPjCr PSPëCḡPsPe, C%Ps PNḡ P°PjP°PSC,P°PrPëPS, PjPsPΓP»PëPIPs, C,P°PePsPΓ P·PrP°C,PSC- PIP·P°C" PjPsPrC-CIIΠC,Pë P· PjPμPjP°PSC,PëPSPsPj, PsP±CrPjPsPIP»CḡCḡC†Pë PiPsC,PμPSC†C-PNḡPSPëPNḡ CḡPëP·PëPe PiC-PrPIPëC%PμPSPSCII CḡC-PIPSC-PI PIPjC-CΓC,Cr C†PëC... PiCḡPμPiP°CḡP°C,C-PI Cr PiP»P°P·PjC- PeCḡPsPIC-;

- PiCḡPë CΓCrPjC-CΓPSPsPjCr PiCḡPëP·PSP°C†PμPSPSC- PjPμPjP°PSC,PëPSCr P· PiC-PrCḡPsC...P»PsCḡPsC,C-P°P·PëPrPsPj C†Pë P±CrPrCH-CIIΠPePëPj PePsPjP±C-PSPsPIP°PSPëPj PiCḡPμPiP°CḡP°C,PsPj, CIIΠPePëPNḡ PjC-CΓC,PëC,CH PiC-PrCḡPsC...P»PsCḡPsC,C-P°P·PëPr, PjPsPΓP»PëPIPμ P·PSPëPΓPμPSPSCII CḡC-PIPSCII

PIPJc-CÍ'C,Cr PsCÍ'C,P°PSPSCHbPsPiPs Cr CÍ'PëCĤPsPIP°C,C†C- PeCĤPsPIC-;

-B P±CfP»Pë PiPsPIC-PrPsPjP»PμPSPSCĬ PiCĤPs PsPeCĤPμPjC- PIPëPiP°PrPePë
PiC-PrPIPëC%oPμPSPSCĬ PjC-P¶PSP°CĤPsPrPSPsPiPs PSPsCĤPjP°P»C-P·PsPIP°PSPsPiPs
CÍ'PiC-PIPIC-PrPSPsC€PμPSPSCĬ (PĤPĤPŸ) PiCĤPë P·P°CÍ'C,PsCÍ'CrPIP°PSPSC-
PjPμPjP°PSC,PëPSCr PiP°C†C-C"°PSC,P°Pj, CĬPeC- PiCĤPëPNëPjP°CĤC,Ch PIP°CĤC,,P°CĤPëPS.
P¶PsC†P° PiCĤPëC†PëPSPSPëPNë P·PiBĤ™ CĬP·PsPe PSPμ PICÍ'C,P°PSPsPIP»PμPSPëPNë,
PSPμPsP±C...C-PrPSPëPNë CĤPμC,PμP»CHbPSPëPNë PjPsPSC-C,PsCĤPëPSPi
PiCĤPsC,CĤPsPjP±C-PSPsPiPsPiPs C†P°CÍ'Cr P°P±Ps PĤPĤPŸ Cr PiP°C†C-C"°PSC,C-PI, CĬPeC-
PsPrPSPsC†P°CÍ'PSPs PiCĤPëPNëPjP°CĤC,Ch PiPμCĤPsCĤP°P»CHbPSC-
P°PSC,PëPePsP°PiCfP»CĬPSC,Pë.

PJ C...PsPrC- C,,P°CĤPjP°PePsPeC-PSPμC,PëC†PSPëC... PrPsCÍ'P»C-PrP¶PμPSCĤ
PsPrPSPsCĤP°P·PsPIPëC... PrPsP· Cr PjPsP»PsPrPëC... P·PrPsCĤPsPIPëC...
PrPsP±CĤPsPiPsP»CHbC†C-PI CÍ'CrC,C,C"°PIPëC... PμC,,PμPeC,C-PI PIP·P°C"°PjPsPrC-C—
PjPμPjP°PSC,PëPSCr P· PiP»C-P±CfCĤPëPrPsPj/PjPμC,C,,PsCĤPjC-PSPsPj,
PrPsPSPμPiPμP·PëP»PsPj PSPμ PIPëCĬPIP»PμPSPs.

P'C-PrPiPsPIC-PrPSPs PrPs PSP°CĬPIIPSPëC... PrP°PSPëC... PeP»C-PSC-C†PSPëC...
PrPsCÍ'P»C-PrP¶PμPSCĤ Cr PjPsP»PsPrPëC... P·PrPsCĤPsPIPëC... PrPsP±CĤPsPiPsP»CHbC†C-PI
PSPμ CÍ'PiPsCÍ'C,PμCĤC-PiP°P»Pë P·PSP°C†CfC%oPsPiPs PIPiP»PëPICr PjPμPjP°PSC,PëPSCr
PiC-PrCĤPsC...P»PsCĤPëPrCr PSP° C,,P°CĤPjP°PePsPeC-PSPμC,PëPeCr PiP°P»P°PSC,P°PjC-PSCr.
PĤPμPjP°PSC,PëPS *in vitro* PSPμ C" C-PSPiC-P±C-C,PsCĤPsPj PŸYP 1Pĥ2, 2Pĥ6, 2PŸ9,
2D6, 2P·1, 3Pĥ, C,,P»P°PIC-PSPIPjC-CÍ'PSPsC— PjPsPSPsPsPeCÍ'PëPiPμPSP°P·Pë,
PμPiPsPeCÍ'PëPrPiC-PrCĤPsP»P°P·Pë P°P±Ps CÍ'CrP»CHbC,,P°C,C-PsPSCr.

PĤCÍ'PsP±P»PëPIPsCÍ'C,C- P·P°CÍ'C,PsCÍ'C¿PIP°PSPSCĬ.

PŸP»C-Pr PrPsC,CĤPëPjCfPIP°C,PëCÍ'CĬ PsP±PμCĤPμP¶PSPsCÍ'C,C-, PiCĤPëP·PSP°C†P°CĤC†Pë
PiCĤPμPiP°CĤP°C, C...PIPsCĤPëPj PSP° PμPiC-P»PμPiCÍ'C-CH, PiP°C†C-C"°PSC,P°Pj P·
PμPiC-P·PsPrP°PjPë CÍ'CrPrPsPj PI P°PSP°PjPSPμP·C-, P° C,P°PePsP¶ PiP°C†C-C"°PSC,P°Pj C-P·
C,,P°PeC,PsCĤP°PjPë CĤPëP·PëPeCr CĤPsP·PIPëC,PeCr PμPiC-P»PμPiCÍ'C-C—.

PŸP»C-Pr CrPSPëPeP°C,Pë PsPrPSPsC†P°CÍ'PSPsPiPs P·P°CÍ'C,PsCÍ'CrPIP°PSPSCĬ
PiCĤPμPiP°CĤP°C,Cr P· C,P°PePëPjPë (NMDA)-P°PSC,P°PiPsPSC-CÍ'C,P°PjPë, CĬPe
P°PjP°PSC,P°PrPëPS, PePμC,P°PjC-PS C,P° PrPμPeCÍ'C,CĤPsPjPμC,PsCĤC,,P°PS. PiC-
CÍ'PiPsP»CfPePë PIPiP»PëPIP°CĤC,Ch PSP° PsPrPSCr PNë C,Cr P¶ CÍ'P°PjCf CÍ'PëCÍ'C,PμPjCf
CĤPμC†PμPiC,PsCĤC-PI, C%oPs PNë PjPμPjP°PSC,PëPS, P° C,PsPjCf PiPsP±C-C†PSC-
PμC,,PμPeC,Pë (PiPμCĤPμPiP°P¶PSPs PiPsPiBĤ™ CĬP·P°PSC- P· C†PμPSC,CĤP°P»CHbPSPsCĤ
PSPμCĤPIPsPiPsCĤ CÍ'PëCÍ'C,PμPjPsCĤ) PjPsP¶CfC,Ch P±CfC,Pë C†P°CÍ'C,C-C€PëPjPë C†Pë
PIPëCĤP°P¶PμPSC-C€PëPjPë.

P"°PμCĬPeC- C,,P°PeC,PsCĤPë, C%oPs CÍ'PiCĤPëC†PëPSCĬCĤC,Ch PiC-PrPIPëC%oPμPSPSCĬ
CĤPĤ CÍ'PμC†C-, PjPsP¶CfC,Ch PsP±CfPjPsPIPëC,Pë PSPμPsP±C...C-PrPSC-CÍ'C,Ch
CĤPμC,PμP»CHbPSPsPiPs PSP°PiP»CĬPrCr P·P° PiP°C†C-C"°PSC,PsPj. P°PeP·P·P°PSC-
C,,P°PeC,PsCĤPë PIPeP»CĤC†P°CĤC,Ch CÍ'CrC,C,C"°PIC- P·PjC-PSPë PrC-C"°C,Pë,
PSP°PiCĤPëPeP»P°Pr P·P°PjC-PSCr P±P°PiP°C,PsPiPs PSP° PjBĤ™ CĬCÍ'PSC- CÍ'C,CĤP°PIPë
CĤP°C†C-PsPSCr PSP° PIPμPiPμC,P°CĤC-P°PSCÍ'CHbPePëPNë P°P±Ps P¶
C-PSC,PμPSCÍ'PëPIIPSPëPNë PiCĤPëPNëPsPj P°PSC,P°C†PëPrPSPëC... C€P»CfPSPePsPIPëC...
P·P°CÍ'PsP±C-PI. PĤCĤC-Pj C,PsPiPs, CĤPĤ CÍ'PμC†C- PjPsP¶Pμ PiC-PrPIPëC%oCrPIP°C,PëCÍ'CĬ

C†PμCḡPμP· CḡC,P°PSPë C,CḡP±CḡP»CḡCḡPSPsPiPs PSPëCḡPePsPIPsPiPs P°C†PëPrPsP·Cḡ C†Pë
PIPSP°CḡP»C-PrPsPe C,CḡP¶PePëC... C-PSC,,PμPeC†C-PNë CḡPμC†PsPIPsPiPs C,CḡP°PeC,Cḡ,
CḡPiCḡPëC†PëPSPμPSPëC... *Proteus bacteria*.

P†CḡPSCḡCḡC,CH P»PëC€Pμ PsP±PjPμP¶PμPSC- PrP°PSC- C%PsPrPs PiP°C†C-C" PSC,C-PI,
CḡPeC- PSPμC%PsPrP°PIPsPs PiPμCḡPμPSPμCḡP»Pë C-PSC,,P°CḡPeC, PjC-PsPeP°CḡPrP°,
PiP°C†C-C" PSC,C-PI C-P· PrPμPePsPjPiPμPSCḡPsPIP°PSPsCḡ P·P°CḡC,C-PNëPSPsCḡ
CḡPμCḡC†PμPIPsCḡ PSPμPrPsCḡC,P°C,PSC-CḡC,Cḡ (P†P†P†-IV CḡC,CḡPiPμPSCḡ P·PiC-PrPSPs P·
PeP»P°CḡPëC,,C-PeP°C†C-C" Cḡ PḡCHCḡ-P™ PsCḡPeCḡCHPePsC—
PeP°CḡPrC-PsP»PsPiC-C†PSPsC— P°CḡPsC†C-P°C†C-C—), P° C,P°PePsP¶ C-P·
PSPμPePsPSC,CḡPsP»CHPsPIP°PSPsCḡ P°CḡC,PμCḡC-P°P»CHPSPsCḡ
PiC-PiPμCḡC,PμPSP·C-C" Cḡ. PḡPsPjCḡ P·P° PiP°C†C-C" PSC,P°PjPë P· C,P°PePëPjPë
P·P°C...PIPsCḡCḡPIP°PSPSCḡPjPë PSPμPsP±C...C-PrPSPëPNë CḡPμC,PμP»CHPSPëPNë
PSP°PiP»CḡPr.

P"Ps CḡPeP»P°PrCḡ PiCḡPμPiP°CḡP°C,Cḡ PIC...PsPrPëC,CH P»P°PeC,PsP·P°, C,PsPjCḡ PNëPsPiPs
PSPμ PiPsPIPëPSPSC- PiCḡPëPNëPjP°C,Pë PiP°C†C-C" PSC,Pë P· CḡC-PrPeC-CḡPSPsCḡ
CḡPiP°PrPePsPIPsCḡ PSPμPiPμCḡPμPSPsCḡPëPjC-CḡC,Cḡ PiP°P»P°PeC,PsP·Pë,
P»P°PeC,P°P·PSPsCḡ PSPμPrPsCḡC,P°C,PSC-CḡC,Cḡ P°P±Ps PiPsCḡCḡC€PμPSPSCḡPjPë
PICḡPjPsPeC,CḡPIP°PSPSCḡ PiP»CḡPePsP·Pë-PiP°P»P°PeC,PsP·Pë.

P—P°CḡC,PsCḡCḡPIP°PSPSCḡ Cḡ PiPμCḡC-PsPr PIP°PiC-C,PSPsCḡC,C- P°P±Ps
PiPsPrCḡPIP°PSPSCḡ PiCḡCḡPrPrCḡ.

P'P°PiC-C,PSC-CḡC,CH

P"°PSPëC... C%PsPrPs PIPiP»PëPICḡ PjPμPjP°PSC,PëPSCḡ PiCḡPë P·P°CḡC,PsCḡCḡPIP°PSPSC-
PNëPsPiPs Cḡ PiPμCḡC-PsPr PIP°PiC-C,PSPsCḡC,C- PSPμPjP°C".

PμPsPIC-PrPsPjP»CḡP»PsCḡCḡ, C%Ps PrPsCḡP»C-PrP¶PμPSPSCḡ PSP° C,PIP°CḡPëPSP°C...
PIPeP°P·CḡCḡC,CH PSP° PjPsP¶P»PëPIC-CḡC,CH CḡPiPsPIC-P»CHPSPμPSPSCḡ
PIPSCḡC,CḡC-C€PSCḡPsCḡC,CḡPsP±PSPsPiPs CḡPsCḡC,Cḡ PiCḡPë PIPiP»PëPIC-
PePsPSC†PμPSC,CḡP°C†C-PNë, C-PrPμPSC,PëC†PSPëC... P°P±Ps PrPμC%Ps P±C-P»CHC€PëC...
PIC-Pr C,PëC..., C%Ps P·P°CḡC,PsCḡPsPICḡCḡC,CHCḡCḡ PrP»Cḡ P»CḡPrPëPSPë.
B PμPsC,PμPSC†C-PNëPSPëPNë CḡPëP·PëPe PrP»Cḡ P»CḡPrPëPSPë PSPμPIC-PrPsPjPëPNë.
PḡPμPjP°PSC,PëPS PSPμ CḡP»C-Pr P·P°CḡC,PsCḡPsPICḡPIP°C,Pë Cḡ PiPμCḡC-PsPr
PIP°PiC-C,PSPsCḡC,C-, P·P° PIPëPSCḡC,PePsPj PIPëPiP°PrPeC-PI, PsP±CḡPjPsPIP»PμPSPëC...
C†C-C,PePsCḡ C,P° CḡPIPSPsCḡ PSPμPsP±C...C-PrPSC-CḡC,Cḡ.

P"PsPrCḡPIP°PSPSCḡ PiCḡCḡPrPrCḡ

PḡPμPIC-PrPsPjPs, C†Pë PIC-PrP±CḡPIP°C"C,CHCḡCḡ PμPeCḡPeCḡPμC†C-Cḡ
PjPμPjP°PSC,PëPSCḡ Cḡ PiCḡCḡPrPSPμ PjPsP»PsPePs, PsPrPSP°Pe, PICḡP°C...PsPICḡCḡC†Pë
P»C-PiPsC,,C-P»CHPSC-CḡC,CH CḡCḡP±CḡC,P°PSC†C-C—, P¶C-PSPeP°Pj, CḡPeC-
P·P°CḡC,PsCḡPsPICḡCḡC,CH PjPμPjP°PSC,PëPS, CḡP»C-Pr CḡC,CḡPëPjP°C,PëCḡCḡ PIC-Pr
PiPsPrCḡPIP°PSPSCḡ PiCḡCḡPrPrCḡ.

PḡPμCḡC,PëP»CHPSC-CḡC,CH

PμPsP±C-C†PSPëPNë PIPiP»PëPI PjPμPjP°PSC,PëPSCḡ PSP° CḡPμPiCḡPsPrCḡPeC,PëPIPSCḡ

C,,CfPSPeC†C-CḤ C‡PsP»PsPIC-PeC-PI C,P° P¶C-PSPsPe PSPµ PIC-PrP·PSP°C‡P°PIC†C¶.

*P—PrP°C,PSC—C†C,CH PIPiP»PēPIP°C,Pē PSP° CēPIPēPrPeC—C†C,CH CḤPµP°PeC†C-C— PīCḤPē
PePµCḤC‡PIP°PSPSC- P°PIC,PsC,CḤP°PSC†PīPsCḤC,PsPj P°P±Ps C-PSCēPēPjPē
PjPµC...P°PSC-P·PjP°PjPē.*

P†PIPScḤPsP±P° PhP»CHC†PiPµPNēPjPµCḤP° PIC-Pr C†PµCḤPµPrPSCḤPsPiPs C†C,C†PīPµPSC¶
PrPs C,C¶P¶PePēC... C,,PsCḤPj P·P°P·PIPēC‡P°PNē P·C†PjPsPIP»CḤC” PīPsPiC-CḤCēPµPSPSC¶
P·PrP°C,PSPsC†C,C- PePµCḤC†PIP°C,Pē P°PIC,PsPjPsP±C-P»PµPj C,P° PīCḤP°C†CḤPIP°C,Pē P·
C-PSCēPēPjPē PjPµC...P°PSC-P·PjP°PjPē. P·C-P»CHCē C,PsPiPs, PjPµPjP°PSC,PēPS PjP°C”
PSPµP·PSP°C‡PSPēPNē P°P±Ps PīPsPjC-CḤPSPēPNē PIPiP»PēPI PSP° CēPIPēPrPeC—C†C,CH
CḤPµP°PeC†C-C— P»CḤPrPēPSPē, C,PsPjC† P°PjP±C†P»P°C,PsCḤPSPēC... PīP°C†C-C”PSC,C-PI
C†P»C-Pr PīPsPīPµCḤPµPrPēC,Pē PīCḤPs PSPµPsP±C...C-PrPSC—C†C,CH
PrPsC,CḤPēPjP°PSPSC¶ PsC†PsP±P»PēPIPsC— PsP±PµCḤPµP¶PSPsC†C,C- PīCḤPē
PePµCḤC†PIP°PSPSC- P°PIC,PsC,CḤP°PSC†PīPsCḤC,PsPj C‡Pē CḤPsP±PsC,C- P·
PsP±P»P°PrPSP°PSPSC¶Pj.

PŸPīPsC†C-P± P·P°C†C,PsC†C‡PIP°PSPSC¶ C,P° PrPsP·Pē.

P>C-PeC†PIP°PSPSC¶ C†P»C-Pr CḤPsP·PīPsC‡PēPSP°C,Pē C,P° PīCḤPsPiPsPrPēC,Pē PīC-Pr
PSP°PiP»C¶PrPsPj P»C-PeP°CḤC¶. PŸPµCḤP°PīC-CḤ C†P»C-Pr CḤPsP·PīPsC‡PēPSP°C,Pē
C,C-P»CHPePē P·P° C†PjPsPIPē PSP°C¶IPSPsC†C,C- PsPīC-PeC†PSP°, C¶PePēPNē P±C†PrPµ
CḤPµPiC†P»C¶CḤPSPs PePsPSC,CḤPsP»CḤPIP°C,Pē PīCḤPēPNēPsPj PīCḤPµPīP°CḤP°C,C†
PīP°C†C-C”PSC,PsPj.

PŸP°P±P»PµC,PePē C†P»C-Pr PīCḤPēPNēPjP°C,Pē 1 CḤP°P· PSP° PrPsP±C† PePsP¶PSPsPiPs
PrPSC¶ PI PsPrPēPS C- C,PsPNē C†P°PjPēPNē C‡P°C†. PŸP°P±P»PµC,PePē PjPsP¶PSP°
PīCḤPēPNēPjP°C,Pē CḤP°P·PsPj P· C—P¶PµCḤ C‡Pē PSPµP·P°P»PµP¶PSPs PIC-Pr
PIP¶PēPIP°PSPSC¶ C—P¶C-.

PŸCḤPēPIP°P»C—C†C,CH P»C-PeC†PIP°PSPSC¶ C-PSPPrPēPIC-PrC†P°P»CHPSPs
PIPēP·PSP°C‡P°C” P»C-PeP°CḤ, C¶PePēPNē PjP°C” PrPsC†PIC-Pr
PrC-P°PiPSPsC†C,C†PIP°PSPSC¶ C,P° P»C-PeC†PIP°PSPSC¶ C...PIPsCḤPsP±Pē
PhP»CHC†PiPµPNēPjPµCḤP°. P”C-P°PiPSPsP· C†P»C-Pr PIC†C,P°PSPsPIP»CḤPIP°C,Pē
PIC-PrPīPsPIC-PrPSPs PrPs PrC-CḤC‡PēC... PīCḤP°PeC,PēC‡PSPēC...
CḤPµPePsPjPµPSPPrP°C†C-PNē. PµPµCḤPµPSPsC†PēPjC—C†C,CH C- PrPsP·C†PIP°PSPSC¶
P»C-PeP°CḤC†CHPePsPiPs P·P°C†PsP±C† C†P»C-Pr CḤPµPiC†P»C¶CḤPSPs
PsC†C-PSCḤPIP°C,Pē, P±P°P¶P°PSPs PīCḤPsC,C¶PiPsPj 3 PjC—C†C¶C†C-PI PīC—C†P»C¶
PīPsC‡P°C,PeC† P»C-PeC†PIP°PSPSC¶. PŸP°PePēPj C‡PēPSPsPj, PeP»C-PSC-C‡PSC-
PīPµCḤPµPIP°PiPē P·P°C†C,PsC†C†PIP°PSPSC¶ PjPµPjP°PSC,PēPSC†
PiC-PrCḤPsC...P»PsCḤPēPrC† C,P° PīPµCḤPµPSPsC†PēPjC—C†C,CH P»C-PeP°CḤC†CHPePsPiPs
P·P°C†PsP±C† PīP°C†C-C”PSC,PsPj C†P»C-Pr CḤPµPiC†P»C¶CḤPSPs PīPµCḤPµPiP»C¶PrP°C,Pē
PIC-PrPīPsPIC-PrPSPs PrPs PīPsC,PsC‡PSPēC... PeP»C-PSC-C‡PSPēC...
CḤPµPePsPjPµPSPPrP°C†C-PNē. PµC-PrC,CḤPēPjC†CḤC‡Pµ P»C-PeC†PIP°PSPSC¶ PjPsP¶Pµ
C,CḤPēPIP°C,Pē, PīPsPePē C,PµCḤP°PīPµPIC,PēC‡PSPēPNē PµC,,PµPeC,
PIPIP°P¶P°C,PēPjPµC,CHC†C¶ C†PīCḤPēC¶C,P»PēPIPēPj, C- PīP°C†C-C”PSC,
PīPµCḤPµPSPsC†PēC,PēPjPµ P»C-PeC†PIP°PSPSC¶ PjPµPjP°PSC,PēPSPsPj
PiC-PrCḤPsC...P»PsCḤPēPrPsPj. PµCḤPēPīPēPSPµPSPSC¶ C,PµCḤP°PīC—

$P \gg C - PeP^{\circ} C \bar{H} C \bar{I} C \bar{H} PeP \bar{e} P_j P \cdot P^{\circ} C \bar{I} P_s P \pm P_s P_j C \bar{I} P \gg C - Pr C \bar{H} P_s P \cdot P_i P \gg C \bar{I} P_r P^{\circ} C, P \bar{e} C \bar{r} P_i P \bar{e} P_i P^{\circ} Pr P_e C \bar{r}, C \bar{I} P_e C \% P_s P \cdot P_s P \bar{e} P_e P^{\circ} C'' C, P_{\mu} C \bar{H} P^{\circ} P_i P_{\mu} P_i C, P \bar{e} C \bar{I} P_s P \bar{e} P_{N_0} P_{\mu} C, P_{\mu} P_e C, P^{\circ} P \pm P_s P_i P^{\circ} C \bar{I} C - C'' P_s C, P_i P_s P_i P^{\circ} P_s P_s P_i P_{\mu} C \bar{H} P_{\mu} P_s P_s C \bar{I} P \bar{e} C, C \bar{H} P \gg C - P_e C \bar{r} P_i P^{\circ} P_s P_s C \bar{I} P_i C \bar{H} P_{\mu} P_i P^{\circ} C \bar{H} P^{\circ} C, P_s P_j.$

$P'' P_s C \bar{H} P_s C \bar{I} P \gg C -.$

$P P_{\mu} P_e P_s P_j P_{\mu} P_s P_r P_s P_i P^{\circ} P_s P^{\circ} P_i P_s C \bar{I} P^{\circ} C, P_e P_s P_i P^{\circ} P_r P_s P \cdot P^{\circ} C \bar{I} C, P^{\circ} P_s P_s P_i P \bar{e} C, C \bar{H} 5 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r}, C \bar{I} P_e P^{\circ} P_i P_s C \bar{I} C, C \bar{r} P_i P_s P_i P_s P \cdot P \pm C - P \gg C \bar{H} C \bar{e} C \bar{r} C'' C, C \bar{H} C \bar{I} C \bar{I} P_i C \bar{H} P_s C, C \bar{I} P_i P_s P_j P_i P_{\mu} C \bar{H} C \bar{e} P \bar{e} C...$

$4 C, P \bar{e} P \parallel P_s C - P_i P \gg C - P_e C \bar{r} P_i P^{\circ} P_s P_s C \bar{I} P, P_r P_s C \bar{I} C \bar{I} P_i P^{\circ} C \bar{H} C \bar{I} P \bar{e} C \bar{H} P_{\mu} P_e P_s P_j P_{\mu} P_s P_r P_s P_i P^{\circ} P_s P_s C - P_i C - P_r C, C \bar{H} P \bar{e} P_j C \bar{r} C \bar{H} C \bar{I} P_s C - P_r P_s P \cdot P \bar{e} C, P^{\circ} P_e P \bar{e} P_j C \bar{I} P \bar{e} P_s P_s P_j:$

$1 - P_{N_0} C, P \bar{e} P \parallel P_r P_{\mu} P_s C \bar{H} (1 - 7 - P_{N_0} P_r P_{\mu} P_s C \bar{H}):$

$P_i P^{\circ} C \bar{I} C - C'' P_s C, C \bar{r} P_s P_{\mu} P_s P \pm C... C - P_r P_s P_s P_i C \bar{H} P \bar{e} P_{N_0} P_j P^{\circ} C, P \bar{e} 5 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r} P_i C \bar{H} P_s C, C \bar{I} P_i P_s P_j C, P \bar{e} P \parallel P_s C \bar{I} P;$

$2 - P_{N_0} C, P \bar{e} P \parallel P_r P_{\mu} P_s C \bar{H} (8 - 14 - P_{N_0} P_r P_{\mu} P_s C \bar{H}):$

$P_i P^{\circ} C \bar{I} C - C'' P_s C, C \bar{r} P_s P_{\mu} P_s P \pm C... C - P_r P_s P_s P_i C \bar{H} P \bar{e} P_{N_0} P_j P^{\circ} C, P \bar{e} 10 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r} P_i C \bar{H} P_s C, C \bar{I} P_i P_s P_j C, P \bar{e} P \parallel P_s C \bar{I} P;$

$3 - P_{N_0} C, P \bar{e} P \parallel P_r P_{\mu} P_s C \bar{H} (15 - 21 - P_{N_0} P_r P_{\mu} P_s C \bar{H}):$

$P_i P^{\circ} C \bar{I} C - C'' P_s C, C \bar{r} P_s P_{\mu} P_s P \pm C... C - P_r P_s P_s P_i C \bar{H} P \bar{e} P_{N_0} P_j P^{\circ} C, P \bar{e} 15 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r} P_i C \bar{H} P_s C, C \bar{I} P_i P_s P_j C, P \bar{e} P \parallel P_s C \bar{I} P;$

$P_i P_s C \bar{I} P \bar{e} P_s P^{\circ} C \bar{H} C \bar{I} P \bar{e} P \cdot 4 - P_i P_s C, P \bar{e} P \parallel P_s C \bar{I} P:$

$P_i P^{\circ} C \bar{I} C - C'' P_s C, C \bar{r} P_s P_{\mu} P_s P \pm C... C - P_r P_s P_s P_i C \bar{H} P \bar{e} P_{N_0} P_j P^{\circ} C, P \bar{e} 20 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r} P_e P_s P \parallel P_s P_s P_i P_s P_r P_s C \bar{I} P.$

$P P_{\mu} P_e P_s P_j P_{\mu} P_s P_r P_s P_i P^{\circ} P_s P^{\circ} P_i C - P_r C, C \bar{H} P \bar{e} P_j C \bar{r} P_i P^{\circ} P \gg C \bar{H} P_s P^{\circ} P_r P_s P \cdot P^{\circ} C \bar{I} C, P^{\circ} P_s P_s P_i P \bar{e} C, C \bar{H} 20 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r}.$

$P_{\mu} P^{\circ} C \bar{I} C - C'' P_s C, P \bar{e} P \gg C - C, P_s C \bar{H} P_s P_i P_s P_i C - P_e C \bar{e}.$

$P P_{\mu} P_e P_s P_j P_{\mu} P_s P_r P_s P_i P^{\circ} P_s P^{\circ} P_r P_s P \cdot P^{\circ} P_r P \gg C \bar{I} P_i P^{\circ} C \bar{I} C - C'' P_s C, C - P_i P_i C - P_e P_s P_j P_i C - P_r 65 C \bar{H} P_s P_e C - P_i C \bar{I} C, P^{\circ} P_s P_s P_i P \bar{e} C, C \bar{H} 20 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r}, C \bar{I} P_e P \cdot P^{\circ} P \cdot P_s P^{\circ} C \bar{I} P_s P_s P_s P_i P \bar{e} C \% P_{\mu}.$

$P_{\mu} P_s C \bar{H} C \bar{e} C \bar{e} P_{\mu} P_s P_s C \bar{I} P C, C \bar{e} P_s P_e C \bar{I} C - C - P_s P \bar{e} C \bar{H} P_s P_e.$

$P'' P \gg C \bar{I} P_i P^{\circ} C \bar{I} C - C'' P_s C, C - P_i C - P \cdot P_i P_s C \bar{H} C \bar{r} C \bar{e} P_{\mu} P_s P_s C \bar{I} P_j C, C \bar{r} P_s P_e C \bar{I} C - C - P_s P \bar{e} C \bar{H} P_s P_e P \gg P_{\mu} P_i P_e P_s P_i P_s C \bar{I} C, C \bar{r} P_i P_{\mu} P_s C \bar{I} P (P_e P \gg C - C \bar{H} P_{\mu} P_s C \bar{I} P_e C \bar{H} P_{\mu} P^{\circ} C, P \bar{e} P_s C - P_s C \bar{r} \bar{H} 50 - 80 P_j P \gg C... P_i) P \cdot P_s P \bar{e} P \parallel P_{\mu} P_s P_s C \bar{I} P_r P_s P \cdot P \bar{e} P_i C \bar{H} P_{\mu} P_i P^{\circ} C \bar{H} P^{\circ} C, C \bar{r} P_s P_{\mu} P_i P_s C, C \bar{H} C - P \pm P_s P_{\mu} P_{\mu} P^{\circ} C \bar{I} C - C'' P_s C, P^{\circ} P_j C - P \cdot P_i P_s C \bar{H} C \bar{r} C \bar{e} P_{\mu} P_s P_s C \bar{I} P_j P \bar{e} C, C \bar{r} P_s P_e C \bar{I} C - C - P_s P \bar{e} C \bar{H} P_s P_e C \bar{I} P_{\mu} C \bar{H} P_{\mu} P_r P_s C \bar{H} P_s P_i P_s C \bar{I} C, C \bar{r} P_i P_{\mu} P_s C \bar{I} P (P_e P \gg C - C \bar{H} P_{\mu} P_s C \bar{I} P_e C \bar{H} P_{\mu} P^{\circ} C, P \bar{e} P_s C - P_s C \bar{r} \bar{H} 30 - 49 P_j P \gg C... P_i) P_r P_s P \pm P_s P_i C \bar{r} P_r P_s P \cdot C \bar{r} C \bar{I} P \gg C - P_r P \cdot P_j P_{\mu} P_s C \bar{e} P \bar{e} C, P \bar{e} P_r P_s 10 P_j P_i. P'' P_s P \cdot C \bar{r} P_j P_s P \parallel P_s P^{\circ} P \cdot P \pm C - P \gg C \bar{H} C \bar{e} P \bar{e} C, P \bar{e} P_r P_s 20 P_j P_i P_s P^{\circ} P_r P_s P \pm C \bar{r} P \cdot P^{\circ} C \bar{I} C, P^{\circ} P_s P_r P^{\circ} C \bar{H} C, P_s P_s C \bar{H} C \bar{I} C... P_{\mu} P_j P_s C \bar{H}, C \bar{I} P_e C \% P_s P_s P_{\mu} P_i P^{\circ} C, P \bar{e} P_i P_s P \bar{e} C... C \bar{H} P_{\mu} P^{\circ} P_e C \bar{I} C - P_{N_0} P_s P_{\mu} P_j P^{\circ} C'' P_i C \bar{H} P \bar{e} P_s P^{\circ} P_{N_0} P_j P_s C - P_i C - C \bar{I} P \gg C \bar{I} P 7 P_r P_s C - P_i$

P»C-PeCfPIP°PSPSCII. PμP°C†C-C”PSC,P°Pj C-P· PīPsCfCfC€PμPSPSCII PjPë C,,CfPSPeC†C-C— PSPëCfPSPe C,CII P¶PePsPiPs CfC,CfPīPμPSCII (PeP»C-CfPμPSCf PeCfPμP°C,PëPSC-PSCf бґ” 5-29 PjP»/C...PI) PrPsP±PsPICf PrPsP·Cf CfP»C-Pr P·PjPμPSC€PëC,Pë PrPs 10 PjPi.

PμPsCfCzC€PμPSPSCII C,,CzPSPeC†C-C— PīPμC†C-PSPePë.

P”P»CII PīP°C†C-C”PSC,C-PI C-P· PīPsCfCfC€PμPSPSCII PjPë C,,CfPSPeC†C-C— PīPμC†C-PSPePë P»PμPiPePsPiPs P°P±Ps CfPμCfPμPrPSCbPsPiPs CfC,CfPīPμPSCII (Child-Pugh A, B) PePsCfPμPeC†C-CII PrPsP·Pë PSPμ PīPsC,CfC-P±PSP°. P”P°PSC- PīCfPs P·P°CfC,PsCfCfPIP°PSPSCII P»C-PeP°CfCfCfPePsPiPs P·P°CfPsP±Cf PīP°C†C-C”PSC,P°Pj P· PIP°P¶PePëPjPë PīPsCfCfC€PμPSPSCII PjPë PīPμC†C-PSPePë PIC-PrCfCfC,PSC-. P—P°CfC,PsCfCfPIP°PSPSCII PjPμPjP°PSC,PëPSCf PīP°C†C-C”PSC,P°Pj C-P· PIP°P¶PePëPjPë PīPsCfCfC€PμPSPSCII PjPë C,,CfPSPeC†C-C— PīPμC†C-PSPePë PSPμ CfPμPePsPjPμPSPPrCfC”C,CHCfCII.

P”C-C,Pë.

PμCfPμPīP°CfP°C, PSPμ P·P°CfC,PsCfPsPICfPIP°C,Pë PrC-C,CII Pj Cf P·PIbґ™ CII P·PeCf P· PSPμPrPsCfC,P°C,PSC-CfC,Cf PrP°PSPëC... C%oPsPrPs P±PμP·PīPμPePë C,P° PμC,,PμPeC,PëPIPSfCfC,C- P№PsPiPs P·P°CfC,PsCfCfPIP°PSPSCII.

PμPμCfPμPrPsP·CzPIP°PSPSCII.

P”PsCfPIC-Pr PsP±PjPμP¶PμPSPëP№.

PŸPëPjPiC,PsPjPë.

P’C-PrPSPsCfPSPs P·PSP°C†PSC- PīPμCfPμPrPsP·CfPIP°PSPSCII (200 PjPi C- 105 PjPi PSP° PrPsP±Cf PīCfPsC,CII PiPsPj 3 PrPSC-PI) CfCfPīCfPsPiPsPrP¶CfPIP°P»PëCfCII CfPëPjPiC,PsPjP°PjPë PiC-PrPIPëC%oPμPSPsC— PIC,PsPjP»CfPIP°PSPsCfC,C-, CfP»P°P±PePsCfC,C- C,P°/P°P±Ps PrC-P°CfPμC”Cf P°P±Ps PjP°P»Pë P±PμP·CfPëPjPiC,PsPjPSPëP№ PīPμCfPμP±C-Pi. PμCfPë PīPμCfPμPrPsP·CfPIP°PSPSC- PrPs 140 PjPi P°P±Ps PSPμPICfC,P°PSPsPIP»PμPSPsCf PrPsP·PsCf CfPīPsCfC,PμCfC-PiP°P»Pë CfPëPjPiC,PsPjPë PīPsCfCfC€PμPSPSCII C†PμPSC,CfP°P»CHbPSPsC— PSPμCfPIPsPiPsC— CfPëCfC,PμPjPë, PSP°PīCfPëPeP»P°Pr CfPīP»CfC,P°PSC-CfC,CH CfPIC-PrPsPjPsCfC,C-, CfPsPSP»PëPIC-CfC,CH, P·P°PīP°PjPsCfPsC†PμPSPSCII, P·P±CfPrP¶PμPSPSCII, P°PiCfPμCfC-Cf, PiP°P»CfC†PëPSP°C†C-C—, CfPsP·P»P°PrPë C...PsPrPë C,P°/P°P±Ps C€P»CfPSPePsPiPs-PePëC€PePsPIC- PīPsCfCfC€PμPSPSCII (P±P»CfPIP°PSPSCII C,P° PrC-P°CfPμCII).

PμC-CfP»CII PīCfPëP№PsPjCf 2000 PjPi PjPμPjP°PSC,PëPSCf Cf PīP°C†C-C”PSC,P° CfPsP·PIPëPSCfP»P°CfCf PePsPjP° (10 PrPSC-PI), P»P°C,PμCfP°P»CHbPSP° PrPëPīP»PsPiC-CII C,P° P·P±CfPrP¶PμPSPSCII. PμC-CfP»CII CfPëPjPiC,PsPjP°C,PëC†PSPsPiPs P»C-PeCfPIP°PSPSCII C,P° PīP»P°P·PjP°C,,PμCfPμP·Cf PīP°C†C-C”PSC, PsPrCfP¶P°PI P±PμP· PSP°CfP»C-PrPeC-PI.

P’ C-PSC€PsPjCf PIPëPīP°PrPeCf PiC-CfP»CII PīCfPëP№PsPjCf 400 PjPi PjPμPjP°PSC,PëPSCf Cf

P— P±PsPeCř CĹPμCĤC†PμPIPs- CĹCřPrPëPSPSPSc— CĹPëCĹC,PμPjPë	P§P°CĹC,Ps PķPμC†P°CĹC,Ps	PĥCĤC,PμCĤC-P°P»CḤPSP° PiC-PiPμCĤC,PμPSP·C-CĹ PŸPμCĤC†PμPIP° PSPμPrPsCĹC,P°C,PSC-CĹC,CḤ P’PμPSPsP·PSPëPN̄ C,CĤPsPjP±PsP·/C,CĤPsPjP±PsPμPjP±PsP»C-P·Pj P—P°PrPëCëPeP°
P— P±PsPeCř PrPëC...P°P»CḤPSPSc— CĹPëCĹC,PμPjPë P— P±PsPeCř C,CĤP°PIPSPsC— CĹPëCĹC,PμPjPë	P§P°CĹC,Ps PķPμC†P°CĹC,Ps P§P°CĹC,PsC,P° PSPμPIC-PrPsPjP°	P—P°PiPsCĤ P’P»CḤPIP°PSPSCĹ PμP°PSPeCĤPμP°C,PëC, ²
P— P±PsPeCř PiPμC†C-PSPePë C,P° P¶PsPIC†PsPIPëPIC-PrPSPëC... CëP»CĹC...C-PI	P§P°CĹC,Ps P§P°CĹC,PsC,P° PSPμPIC-PrPsPjP°	PμC-PrPIPëC%PμPSPSCĹ PiPsPeP°P·PSPëPeC-PI C,,CřPSPeC†C-C— PiPμC†C-PSPePë P’PμPiP°C,PëC, P’PsP»PsPIPSPëPN̄ P±C-P»CḤ PμC-PrPIPëC%PμPSP° PIC,PsPjP»CḤPIP°PSC-CĹC,CḤ
P—P°PiP°P»CḤPSC- PiPsCĤCřCëPμPSPSCĹ	P§P°CĹC,Ps PķPμC†P°CĹC,Ps	

¹ P’P°P»CḤC†PëPSP°C†C-C— PiPμCĤPμPIP°P¶PSPs CĹPiPsCĹC,PμCĤC-PiP°P»Pë Cř
PiP°C†C-C’’PSC,C-PI C-P· C,CĹP¶PePsCĤ C,,PsCĤPjPsCĤ C...PIPsCĤPsP±Pë
PĥP»CḤC†PiPμPN̄PjPμCĤP°.

² PhPeCĤPμPjC- PiPsPIC-PrPsPjP»PμPSPSCĹ PiCĤPë PjPμPrPëC†PSPsPjCř
P·P°CĹC,PsCĹCřPIP°PSPSC-.

PIPIPsCĤPsP±P° PĥP»CḤC†PiPμPN̄PjPμCĤP° PiPsPIBĤ™ CĹP·P°PSP° P· PrPμPiCĤPμCĹC-C’’CĤ,
CĹCřC—C†PëPrP°P»CḤPSPëPjPë C-PrPμCĹPjPë C,P° CĹCřC—C†PëPrPsPj. PŸP°PeC-
PIPëPiP°PrPePë PIC-PrPsPjC- PiCĤPë PjPμPrPëC†PSPsPjCř P·P°CĹC,PsCĹCřPIP°PSPSC-
PjPμPjP°PSC,PëPSCř.

PŸPμCĤPjC-PS PiCĤPëPrP°C,PSPsCĹC,C-. 3 CĤPsPePë.

PJPjPsPIPë P·P±PμCĤC-PiP°PSPSCĹ. P—P±PμCĤC-PiP°C,Pë Cř PSPμPrPsCĹC,CřPiPSPsPjCř
PrP»CĹ PrC-C,PμPN̄ PjC-CĹC†C- PI PsCĤPëPiC-PSP°P»CḤPSC-PN̄ CřPiP°PePsPIC†C- PiCĤPë
C,PμPjPiPμCĤP°C,CřCĤC- PSPμ PIPëC%Pμ 25 B°PŸ.

PJPiP°PePsPIPëP°. PĥPμPjPsPeCĹ 10: PiPs 10 C,P°P±P»PμC,PsPe Cř P±P»C-CĹC,PμCĤC-;
PiPs 3 P°P±Ps 6 P±P»C-CĹC,PμCĤC-PI Cř PeP°CĤC,PsPSPSC-PN̄ PiP°C†C†C-.

PĥPμPjPsPeCĹ 20: PiPs 10 C,P°P±P»PμC,PsPe Cř P±P»C-CĹC,PμCĤC-; PiPs 3 P°P±Ps 6
P±P»C-CĹC,PμCĤC-PI Cř PeP°CĤC,PsPSPSC-PN̄ PiP°C†C†C-.

$$\mathbf{P_{\text{L}}P^{\circ}C_{\text{P}}P_{\text{P}}P_{\text{S}}C\text{H}_3C-C\text{H}_2\text{PIC-PrP\ddot{I}C\acute{r}C\acute{I}P_{\text{E}}C\acute{r}. P-P^{\circ}C\text{H}_2P_{\text{U}}C\ddagger P_{\text{U}}P\ddot{I}C_{\text{P}}P_{\text{S}}P_{\text{I}}.}$$

P'PëC₇PsP±PSPëPë. PÿPhP' B«PαP°C₇PjP° PÿC,P°C₇C,B» (C„P°CíCíPIP°PSPSC₇ C,P° PíP°PëCíPIP°PSPSC₇ P· C„,PsC₇PjPë in bulk C„C-C₇PjPë PÿC-PSC,PsPS PíC-CíPíP°PSC-C₇, Pÿ.P>., PíCíPíP°PSC-C₇).

**P_HC-ClC†PμP·PSP°C...PsPrP¶PμPSPSCII PIPëCƧPsP±PSPëPeP° C,P° P°PrCƧPμClP°
PjC-ClC†CII PiCƧPsPIP°PrP¶PμPSPSCII PNøPsPiPs PrC-CII»CHßPSPsClC,C-**

$$\text{P}|\text{P}\epsilon\text{C}\overline{\text{H}}\text{P}^{\circ}\text{C}-\text{PSP}^{\circ}, 03124, \text{P}]. \text{P}\overline{\text{L}}\text{P}\overline{\text{e}}\text{C}-\text{PI}, \text{P}\pm\text{C}\overline{\text{r}}\text{P}\gg\text{CH}\text{PIP}^{\circ}\text{C}\overline{\text{H}} \text{P}'\text{P}^{\circ}\text{C}\overline{\text{r}}\text{P}\gg\text{P}^{\circ}\text{PIP}^{\circ} \text{P}''\text{P}^{\circ}\text{PIP}_{\mu}\text{P}\gg\text{P}^{\circ}, 8.$$

$PJ\ C\overline{H}P^{\circ}P\cdot C - PIP\ddot{e}PSP\ddot{e}PePSP\mu PSPSC\overline{C}I\ P\ddot{i}PsP\pm C - C\ddagger PSP\ddot{e}C... P\mu C,,P\mu PeC,C-PI\ C,P^{\circ}$
 $P\cdot P^{\circ}P\ddot{i}P\ddot{e}C,P^{\circ}PSC\overline{H}\ C\%PsPrPs\ P\pm P\mu P\cdot P\ddot{i}P\mu PeP\ddot{e}\ P\cdot P^{\circ}C\overline{I}^{\circ}C,PSC\overline{I}^{\circ}C\acute{e}PIP^{\circ}PSPSC\overline{C}I$
 $P\gg C-PeP^{\circ}C\overline{H}C\overline{I}^{\circ}CHPePsPiPs\ P\cdot P^{\circ}C\overline{I}^{\circ}PsP\pm C\acute{e}\ P\ddot{i}C\overline{H}PsC\overline{I}^{\circ}P\ddot{e}PjPs\ P\cdot PIP\mu C\overline{H}C,P^{\circ}C,P\ddot{e}C\overline{I}^{\circ}C\overline{C}I\ PrPs$
 $PIC-PrPrC-P\gg C\acute{e}\ C,,P^{\circ}C\overline{H}PjP^{\circ}PePsPSP^{\circ}PiP\gg C\overline{C}IPrC\acute{e}\ P\ddot{y}PhP'\ B\langle PhP\ddot{Y}P\ddagger P\acute{k}Ph\ PJP_{\circ}P\ PhP\ddagger P\acute{k}PhB\rangle\ P\cdot P^{\circ}$
 $P^{\circ}PrC\overline{H}P\mu C\overline{I}^{\circ}PsC\overline{H}: P\pm C\acute{e}P\gg CHPIP^{\circ}C\overline{H}\ P'P^{\circ}C\ddagger P\gg P^{\circ}PIP^{\circ}\ P''P^{\circ}PIP\mu P\gg P^{\circ}, 8, Pj. P_{\circ}P\ddot{e}C-PI, 03124,$
 $C,P\mu P\gg/C,,P^{\circ}PeC\overline{I}^{\circ}: 38\ 044\ 281\ 2333.$