

!" #&/

4;O <548G=>3> 70AB>AC20=O ;V:0@AL:>3> 70A>1C

"\$!

!::04:
4VNG0 @5G>28=0: glucosamine;
1 ?0:5B 70@84C 1,884 3 (5:2V20;5=B 1,5 3 3;N:>70@84C);
4?>28=8: A>@1VB (420), <8A;>B0 <8<=>=0 1572>4=0, 0A?0@B0< (951), ?>;V5B8;5=3;V:>;L 4000.

V:0@AL:0 D>@<0. >@>H>; 4;O >@0:L=>3> @>7G8=C.
A=>2=V DV78:>-EVABV: :@8AB0;VG=89 ?>@>H>; 2V4 1V;>3> 4> 1V;>3> 7 6>2BC20B8< 2V4BV=>< :>;L>@C.

S0@<0:>B5@0?52B8G=0 3@C?0. 5AB5@>W4=V ?@>B870?0;L=V V ?@>B8@52<0B8G=V 70A>18.
>4 "% 01%05.

S0@<0:>>3VG=V 2;0AB82>ABV.
S0@<0:>48=0 :B82=89 V=3@54VT=B AV;L 0<=>A0E0@84C 3;N:>70@30=V7@8AB>2CTBLAO @07< V7 AC;LD0B0<8 4;O 1V>A8=B57C 3V0;C@=>2>W :8A;>B8 A8=>2V0;L=>W
@V48=8 V 3;V:>70B;V:0=V2 >A=>2=>W AC1AB0=FWW AC3;>1>2>3> E@O10.
5E0=V7< 4VW 3;N:>70 AB8703;V:0=V2 V, 2V4?>2V4=>, AC3;>1>28E ?@>B5>3;V:0=V2. @3>, 3;N:>70O2;OT ?@>B870?0;L=V 2;0AB82>ABV, C?>2V;L=NT ?@>F5A8 @C9=C20=O
AC3;>1>2>3> E@O10 3;>;2=8< G8=< 70 @0EC=>; 9>3> <5B01>;VG=8E 0:B82=>AB59, 740B=>ABV ?@83=VGC20B8 0:B82=VABL V=B5@;59;V=C1 (IL-1), I>, 7 >4=>3> 1>;C. A?@8OT 4VW =O
A8<8>AB5>0@B@8BC, 0 7 V=H>3> 70B@8@CH5=L AC3;>1V2. ?@> I> A2V4G0BL 40=V 4>23>AB@>28E ;;V=VG=8E 4>A;V465=L
D5:B82=VABL 3;N:>70A=>>AB5>0@B@8BC >G5284=0 265 G5@57 2-3 B86=V 2V4 ?>G0B:C ;V:C20=O.
A=CNBL 40=V ?@> @57C;LB0B8 ;;V=VG=8E 4>A;V465=L I>45=>3> 15725@5@2=>3> ;V:C20=O ?@>B03< 3 @>:V2. O:V A2V4G0BL ?@> ?@>3@5A82=5 ?V42815=O 5D5:B82=>ABV
3;N:>70
;N:>7045<=>AB@C202 4>1@C ?5@5=>A83> VAB>B=>3> 2?;82C 3;N:>70-AC48=C, 48E0;L=C, 2535B0B82=C 01> F5=B@0;L=C =5@2>2C A8AB5=5 1C;>.
S0@<0:>:V=5B8:0. 90 % 4>78 3;N:>70 V ?>2=VABN 2A<:>BCTBLAO 7V H;C=>2>:-.8H:>2>3> B@0;BC, ?@>E>48BL G5@57 1V;>3>3VG=V 10@ T@8 V ?@>=8:0T C B:0=8=8, ?5@5206=>
AC3;>1>2>3> E@O10. V>4>ABC?=VABL 26 %. "1/2 68 3>48=.

;V=VG=V E0@0:B5@8AB88.8.
>:070=O. V:C20=O A8AB5>0@B@8BC, B>1B> 1>;N V DC=:FV=>0;L=>3> >1<565=O.

@>B8?>:070=O. V42815=0 GCB;82VABL 4> :>5=BV2 ?@5?0@0BC. >@CH5=O DC=:FV9 ?5GV=:8 V =8@>: C AB04VW 45>:@>2>B5G. \$5=V;:5B=<C@VO. ;5@3VO =0<:>NA:8 (4VNG0
@5G>28=0 >B@8<0=0 V7 <:>NA:V2).

70T<4VO 7 V=H8<8 ;V:0@AL:8<8 70A>10<8 B0 V=HV 2848 270T<4V9. C;> 2V4 ?>A8;5=O 4VW :C<0@8=>28E 0=B8:>03C;O=BV2. # 72 O7:C 7 F8< ?0FVT=B0< 4>FV;L=> ?@>2>48B8
=>B@>;L ?0@<5B@V2 :>03C;OFVW.
>6;825 ?>A8;5=O H;C=>2>:-.8H:>2>3> 2A<:>BC20=O B5B@0F8;;V=C.
@5?0@0B ACW4=8<8 ?@>B870?0;L=8<8 70A>10<8 V 3;N:>:@>B8>AB5@>W40<8.

A>1;82>ABV 70AB>AC20=O. # E2>@8E =0 0ABA>2C20B8 7 >15@56=VABN, >A:V;L:8 B0:V ?0FVT=B8<6CBL 1CB8 1V;LH AE8;L=8<8 4> @>728B:C 0;5@3VG=8E @50:5V9 =0 3;N:>70
@N20=O.
@5?0@0B @1VB, B>A8<>ABV D@C:B>78, ?@5?0@0B C FV9 ;V:0@AL:V9 D>@A>2C20B8 =5 @5:>5=4CTBLAO.
0FVT=B0<, O:V ?5@51C20NBL =0 4VTBV 7 :>=B@>;L>20=8< 2< =0B@VN, =5>1EV4=> 270B8 4> C2038 =0O2=VABL =0B@VN C FV9 ;V:0@AL:V9 D>@
0 ?>G0B:C ;V:C20=O 4;O ?0FVT=BV2, E2>@8E =0 FC:@>289 4V015B, 4>FV;L=> ?@>2>48B8 :>=B@>;L @V2=O FC:@C C :@>2V.
0AB>A>2C20B8 BV;L:8 ?V4 =03;04<; ;V:0@O ?0FVT=B0< V7 ?>@CH5=O<8 DC=:FV9 ?5GV=:8 V =8@>: (>:@V< ?>@CH5=L C AB04VW 45;>1>D;51VB0<8.

0AB>AC20=O C ?5@V>4 203VB=>ABV 01> 3>4C20=O 3@C44N. 0=V I>4> 70AB>AC20=O ?@5?0@0BC C ?5@V>4 203VB=>ABV 01> 3>4C20=O 3@C44N 2V4ACB=V, B>AC20=O C F59
?5@V>4 ?@>B8?>:070=5.

40B=VABL 2?;820B8 =0 H284:VABL @50:FVW ?@8 :5@C20=V 02B>B@0=A?>@B< 01> V=H8<8 <5E0=V7<0<8. >A;V465=O I>4> 2?;82C ?@5?0@0BC =0 740B=VABL :5@C20B8 02B<>1V;>;<
01> V=H8<8 <5E0=V7<0<8 =5 ?@>2>48;8A0. !;V4 1CB8>15@56=8<8 ?@8 :5@C20=V B@0=A?>@B<8 70A>10<8 V 28:>=0=V @>1VB, I> ?>B@51CNBL C2038. # 28?04:C ?>O28
A=>;82>ABV, 2B<:>N20=>ABV, 70?0<>@>G5=O 01> ?>@CH5=L 7>@C :5@C20=O 02B>B@0=A?>@B< V @>1>B0 7 V=H8<8 <5E0=V7<0<8 701>@>=5=0.

!>AV1 70AB>AC20=O V 4>78. 0AB>A>2C20B8 2=CB@VH=L>.
>@>A;V ?0FVT=B8 V ?0FVT=B8 ;VB=L>3> 2V:C: 24=>3> ?0:5BC, 5:2V20;5=B=89 1,5 3 3;N:>707G8=8B8 C A:;O=V 2>48 V ?@89<0B8 1 @07 =0 4>1C, 1060=> ?V4 G0A 26820=O W6V.
C@A ;V:C20=O 4-12 B86=V2 01> 4>2H5 (?@8 =5>1EV4=>ABV). 0 ?@87=0G5=O<;V:0@O ;V:C20=O<=>6=0 ?>2B>@N20B8 2-3 @078 =0 @V: 7 V=B5@20;<C 2 6 ?@8 @5F8482V
70E2>@N20=O.

VB8. 5 70AB>A>2C20B8 4VBO<, >A:V;L:8 15725:0 V 5D5:B82=VABL ?@5?0@0BC 4;O B0:8E ?0FVT=BV2 =5 2AB0=>2;5=V.

5@54>7C20=O. 8?04;V2 ?5@54>7C20=O =5 2V4AL. A=CNGV 40=V 4>A;V465=L 3>AB@>W V E@>=VG=>W B>:A8G=>ABV C B20@8= A2V4G0BL, I> A8<8 B>:A8G=>ABV =02@O4 G8
28=8=<CBL =02VBL C 4>70E, O:V ?5@5281CNBL B5@0?52B8G=C 4>7C C 200 @07V2. 4=0 C 28?04:0E ?5@54>7C20=O <>6;825 ?>A8;5=O ?@>O2V2 ?>1VG=8E @50:FV9, B> ?@>25AB8 A8
<0B8G=5 ;V:C20=O, A?@O<20=5 =0 2V4=>2;5=O 2>4=>5;5:B@>;VB=>3> 10;0=AC.

>IVG=V @50:FVW. I>:C B@02=>W A8AB5<8: 1V;L C 682>BV, <5B5>@87<, 48A?5?AVO, 4V0@50, 70?>@, =C4>B0.
I>:C =5@2>2>W A8AB5<8: 3>;>2=89 1V;L, A>=>;82VABL, 2B<:>N20=VABL, 70?0<>@>G5=O.
I>:C VW A8AB5<8: 0;5@3VG=V @50:FVW.
I>:C >@30=V2 7>@C: @>7;048 7>@C.
I>:C H:V@8: 5@8B5<0, A25@1V6, 28A8?0=O, 0=3V=>52@>B8G=89 =01@O:; :@>?820=:0, 28?040=O 2>;>AAO.

"5@ABV.3 @>:8.

#<28 715@V30=O. 15@V30B8 2>@83V=0;L=V9 C?0:>2FV ?@8 B5 □.

15@V30B8 C =54>ABC?=>



#?0:>2:0. > 4 3 C ?0:5B0E 10, 20 C :>@>1FV.

0B53>@VO 2V4?CA:C. 0 @5F5?B>

8@>1=8:."«\$0@<0F52B8G=0 :>@>2□O».

VAF57=0E>465=O 28@>1=8:0 B0 9>3> 04@5A0 20465=O 4VO;L=>ABV.

#:@0W=0, 61013,