## **Supporting Information**

Figure S1: Purification of BioA protein.

Figure S2: Docking of CHM-1 (the known inhibitor of BioA) at the active site of BioA.

**Figure S3:** Evaluation of inhibitory potential of compounds against Aspartate transaminase (AST).

Figure S4: Evaluation of compounds for inhibition of *M. tuberculosis* growth.

**Figure S5:** : Superimposition of docked conformations of compound A35, compound A36 and compound 65 at the active site of BioA.

Figure S6: Multiple sequence alignment of *M. tuberculosis* BioA.

Figure S7: Comparison of structures of sinefungin bound BioA and KAPA bound BioA.

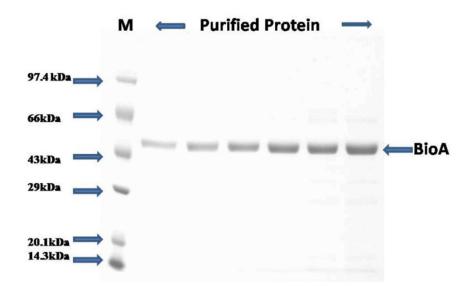
Table S1: List of A series compounds that exhibited greater than 20% inhibition at 100µg/mL.

Table S2: List of X series compounds that exhibited greater than 20% inhibition at 100µg/mL.

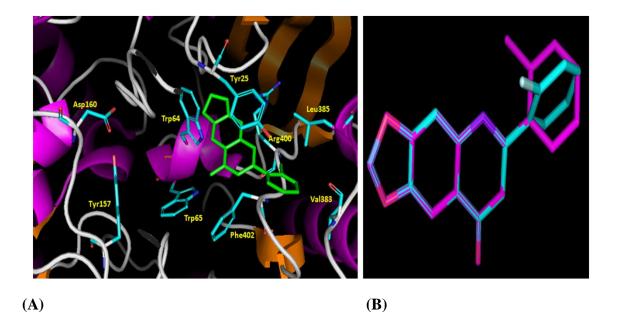
**Table S3:** Assessment of the drug like properties of the potential inhibitors of BioA was calculated by AlogPs.

Table S4: Evaluation of cytotoxicity of the compounds in CHO cell line.

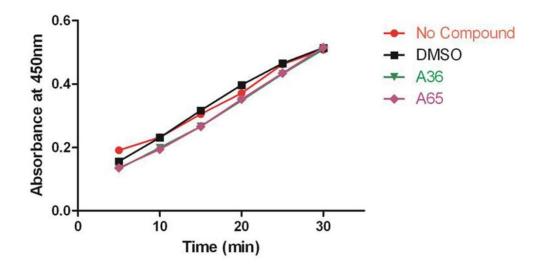
## **Supplementary information**



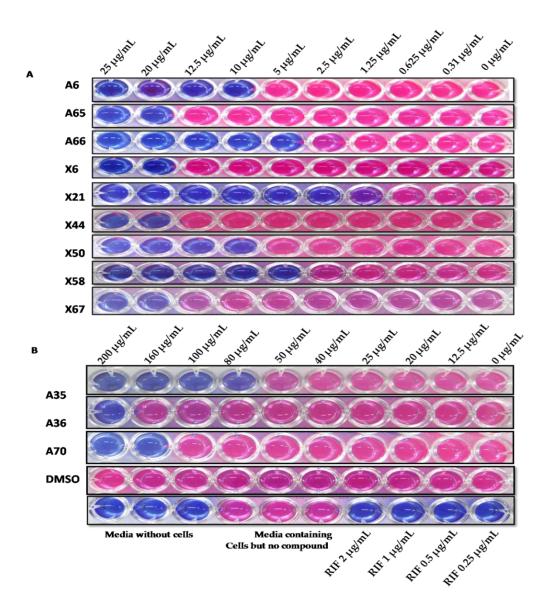
**Figure S1:** Purification of BioA protein. BioA was purified by using Ni-NTA affinity chromatography. BioA was eluted by using 250 mM imidazole and the purity of different eluted fractions was analyzed by SDS polyacryamide gel electrophoresis on 12.5% gel. BioA was observed at an estimated size of 48.6kDa.



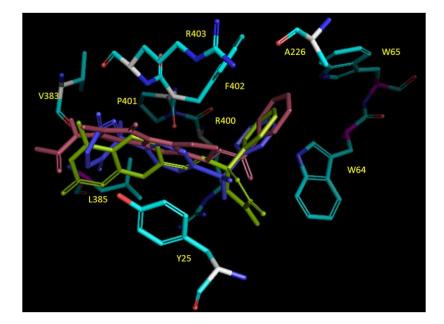
**Figure S2:** Docking of CHM-1 (the known inhibitor of BioA) at the active site of BioA. (A) CHM-1 was docked at the active site of BioA by Autodock4.2 by using the same grid coordinates as used in the docking studies. As expected, the docked complex of BioA-CHM-1 was found to be in the vicinity of the active site residues as reported earlier.<sup>19</sup> (B) Superimposition of docked and crystallographic mode of binding of CHM-1. Cyan colour represents the crystallographic mode of CHM-1 and magenta colour represents the docked conformation of CHM-1.



**Figure S3:** Evaluation of inhibitory potential of compounds against Aspartate transaminase (AST). Compounds exhibiting greater than 60 percent inhibition of BioA activity were evaluated for their potential to inhibit another PLP dependent enzyme i.e. AST. Reaction mix containing AST positive control and compound was incubated for 10 minutes at 37°C followed by the addition of AST substrate, AST enzyme mix and AST developer and further incubated for 30 minutes at 37°C. Formation of the product was detected by measuring the absorbance at 450nm. None of the compounds displayed any inhibition of AST activity and no reduction in the absorbance was observed at 450 nm. The figure depicts the results of two representative compounds.



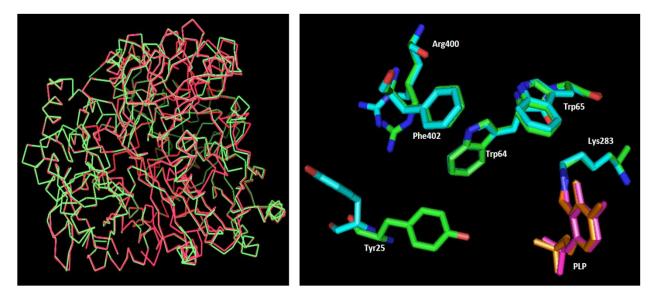
**Figure S4:** Evaluation of compounds for inhibition of *M. tuberculosis* growth. (A) Representative images after REMA assay for inhibition of *M. tuberculosis* growth by various compounds in the concentration range from 0.625  $\mu$ g/mL to 25  $\mu$ g/mL. (B) Compounds exhibiting greater than 60% inhibition of BioA enzyme activity were further tested for their potential to inhibit *M. tuberculosis* growth in the concentration from 12.5  $\mu$ g/mL to 200  $\mu$ g/mL. DMSO was used as a control whereas Rifampicin (RIF) was used as a positive control for the assay. DMSO did not display any inhibition of *M. tuberculosis* growth till the highest concentration employed.



**Figure S5**: Superimposition of docked conformations of compound A35, compound A36 and compound 65 at the active site of BioA. The figure represents the compounds A35, A36 and A65 docked at the active of BioA. Surrounding residues were represented in cyan colour. Pink colour represents compound A35, green colour represents compound A36 and blue colour represents compound A65.

|                              |                                                                                                                              |            | S.cerevisiae                 | FMHGPTFMGNALACSVAEKSMDILLRGEWRKQVSAIENQIYRELYQYIKNPDNGLI 402                                                                 |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| S.cerevisiae<br>H.influenzae | MSQEISYTPDVAEL-LDFDKKHIWHYY SLSSPLNVYPVKSAHGCKLVLDTDSPVDV<br>MVDEQSL-LAFDTQHIWHYY SVSSDMPLYAVERADGVMITLKDGR                  |            | H.influenzae                 | FMHGPTFMANPLACAIAAESIRLLLESPWQQNIQRIESSLKQQLSPLSEK 356                                                                       |
| S.marcescens                 | MSVTASD-LAFDORHIWHFY SMSRPLPCYPIESASGVELOLADGR                                                                               |            | S.marcescens                 | FMHGPTFMGNPLACAVADASLALLAENRWQAQVSAIETQLKRELLPLGRC 356                                                                       |
| E.coli                       | MTTDD-LAFDQRHIWHFY SMTSPLPVYPVVSAEGCELILSDGR                                                                                 | 43         | E.coli                       | FMHGPTFMGNPLACAAANASLAILESGDWQQQVADIEVQLREQLAPARDA 353                                                                       |
| E.herbicola                  | MTQDD-LAFDRRHIWHPY SMTSPLPVYPVQSAQGCELQLASGE                                                                                 | 43         | E.herbicola<br>B.flavum      | FMHGPTFMGNPLACAVANASLELLARGEWQVQVAAIEAQLKRELAPARAA 353<br>LMHGPTFMANPLACAVSHASLEIIETGMWQKQVKRIEAELIAGLSPLQHL 352             |
| B.flavum                     | KTDGVFLTLEDGS                                                                                                                | 42         | Mtb                          | LMHGPTFMANPLACAVSHASLEITETGMWQRQVRIEAELIAGLSPLQHL 352<br>LMHGPTFMANPLACAVSVASVELLLGQDWRTRITELAAGLTAGLDTARAL 362              |
| Mtb                          | MA-AATGGLTPEQI-IAVDGAHLWHPY: SIGREAVSPVVAVAAHGAWLTLIRDG-QPI                                                                  | 55<br>57   | M.leprae                     | LMHGPTFMANPLACAVSVASVEVLLGQDWRSRVAEISAGLTAGLEAAQGL 364                                                                       |
| M.leprae<br>B.subtilis       | MS-GATSGLTPEQI-GAIDAAHLWHFYSTIGAATGVIPPVVAVAAHGANLTLIRDG-KPI<br>MTHDLIE-KSKKHLWLFF QMKDYD-EN-PLIIESGTGIKVKDINGK              |            | B.subtilis                   | FFHGHSYTGNQLGCAVALENLALFESENIVEQVAEKSKKLHFLLQDLHAL 361                                                                       |
| M.jannaschii                 | MNIDKNLLEKWDKEYIWHFY QMKEYR-ESKNLIIERGEGNYLIDIYGN                                                                            |            | M.jannaschii                 | LYHGHTYTGNQLLCSAALATLEIFEKENVIENIQPKIKLFHKELRKLKEL 377                                                                       |
| B.sphaericus                 | MKQVLTEL-QEKDLQHWHPC:QMKDYE-AFPPIVIKKGEGVWLYDEQNQ                                                                            | 48         | B.sphaericus                 | FLHSHSYTGNTLACRVALEVLAIFEEEQYIDVVQDKGERMRKLALEAFSDL 367                                                                      |
| H.pyroli                     | MNFQENL-AALDLEYLWHPC:QWQEHQ-NFPIIPIKKAQGIYLYDFNDN                                                                            | 47         | H.pyroli                     | FLHSHSYTGNALACACANATLDIFEKENVIEKNKALSGFIFNTLQNALKPLMEQ 359                                                                   |
|                              | * * * <b>*</b> * *                                                                                                           |            |                              |                                                                                                                              |
| S.cerevisiae                 | EVIDAMSS WWWIHGYNNPELNEALTKOMLKFSHVLLGGFTHKGAVNLVOKLLKVIDEPS                                                                 | 116        | S.cerevisiae                 | GTWKRVSVIGAVGIVELYKKTDPEWFQKKFISKGVH3RPFNCLCYIMP 451                                                                         |
| H.influenzae                 | RLIDGMSSMMALHGYNHPRLNAAAQNQLAKMSHIMFGGFTHDPAVELAQLLVQIL-PNG                                                                  | 104        | H.influenzae                 | -DYVKEVRALGAIGWEMKSAVNMKTLVPRFVEQGVWIRPFGKLVYVMP 404                                                                         |
| S.marcescens                 | SLVDGMSS MAAIHGYNHPRLNQAASQQLEKMSHVMFGGITHPAAISLCRRLVEMT-PEA                                                                 | 104        | S.marcescens                 | -RRNPHVRVLGAIGVVEMREPVDVAELQRGFVERGVWIRPFGKLIYLMP 404<br>-EMVADVRVLGAIGVVETTHPVNMAALOKFFVEOGVWIRPFGKLIYLMP 401               |
| E.coli                       | RLVDGMSS MM. AIHGYNHPQLNAAMKSQIDAMSHVMFGGITHAPAIELCRKLVAMT-PQP                                                               | 102        | E.coli<br>E.herbicola        | -EMVADVRVLGAIGVVETTHPVNMAALQKFFVEQGVN3RPFSKLIYLMP 401<br>-ETVADVRVLGAIGVIETHQPVNMAALQRFFVEQGVN3RPFSKLIYLMP 401               |
| E.herbicola<br>B.flavum      | QLVDGMSSMMAIHGYNHPHLNAAMKTQIEAMSHVMFGGITHAPAVSLCRKLVAMT-PEA<br>TVIDAMSSMMAIHGHGHPRLKAAAQKQIDTMSHVMFGGLTHEPAIKLTHKLLNLT-GNS   |            | B.flavum                     | -PGVADVRVLGAIGVIEMEONVNVEEATQAALDHGVWIRPFGRLLYVMP 400                                                                        |
| Mtb                          | EVLDAMSS W AIHGHGHPALDQALTTQLRVMNHVMFGGLTHEPAARLAKLLVDIT-PAG                                                                 |            | Mtb                          | -PAVTDVRVCGAIGVIECDRPVDLAVATPAALDRGVNURPFRNLVYAMP 410                                                                        |
| M.leprae                     | EALDAMSS M/TAIHGHGHSVLDAALTTQLGAMNHVMFGGLTHEPAARLAQLLVDIT-PAG                                                                | 116        | M.leprae                     | -PGVIDVRVCGAIGVIECDRSVDLAVATPAALDRRVWLRPFRNLVYAMP 412                                                                        |
| B.subtilis                   | EYYDGFSSWI NVHGHRKKELDDAIKKQLGKIAHSTLLGMTNVPATQLAETLIDIS-PKK                                                                 | 103        | B.subtilis                   | -PHVGDIRQLGFMCGAELVRSKETKEPYPADRRIGYKVSLKMRELGMLTRPLGDVIAFLP 420                                                             |
| M.jannaschii                 | KYLDAVSSIW NLFGHSRKEIIEAIKNQADKICHSTLLGCGNVPSILLAKKLVDIT-PKH                                                                 |            | M.jannaschii                 | -EHVGDVRGRGFMVGIELVKDKETKEPYPYGYKAGYRVAEKLLEKGIM RPIGNVIILVP 436                                                             |
| B.sphaericus                 | RYLDAVSSWINLFGHANPRISQALSEQAFTLEHTIFANFSHEPAIKLAQKLVALT-PQS<br>AYMDLISSWINLFGHNNAYISQQLKNQIDDLEHVLLASFSHKPIITLSQRLCQLTH      | 107<br>104 | B.sphaericus<br>H.pyroli     | -PFVGEYRQVGFVGAIELVANRDTKEPLPSEERIGYQIYKRALAKGLLIRPLGNVLYFMP 426<br>-QVVSDLRHLGMVFAFEVFIQTKERLSLAVFKKTLKKGLLIRPLNNTIYLMP 410 |
| H.pyroli                     | * ** * :*: * :*: * :*: * :*:                                                                                                 | 104        | in pyrorr                    | : : : :                                                                                                                      |
|                              |                                                                                                                              |            |                              |                                                                                                                              |
| S.cerevisiae                 | LQYCFLADSGSVAVEVALKMALQSNMSGEATK-NRTKFLTIKNCYIGDTFGAMSVCDPEN                                                                 |            | S.cerevisiae<br>H.influenzae | PYVITTELLTKVNQVLIEVLHENKSHINQ 480                                                                                            |
| H.influenzae<br>S.marcescens | LDKIFFADSGSVAVEVAMKMAIQYQH-AKGEV-QRQKFATIRSQYIGDTWNAMSVCDPTT<br>LQCVFLADSGSVAVEVSLKMALQYWQ-ARGERRQRILTLRHQYIGDTFGAMSVCDPDN   | 162<br>161 | S.marcescens                 | PFVIKDDELQKLTEGMILALTQEYEH 430<br>PYIIEAEQLSRLTAAVADAAR 425                                                                  |
| E.coli                       | LQCVFLADSGSVAVEVSLKMALQYWQ-ARGER RQRILTLRHQYBDTFGAMSVCDPDN<br>LECVFLADSGSVAVEVAMKMALQYWQ-AKGEA RQRFLTFRNQYBDTFGAMSVCDPDN     | 159        | E.coli                       | PYIILPQQLQRLTAAVNRAVQDETFFCQ- 429                                                                                            |
| E.herbicola                  | LECVFLADSGSVAVEVSMKMALQYWQ-AKGESRRRFLTFRRCVIGDTFGAMSACDPDN                                                                   |            | E.herbicola                  | PYVISPEQLSKLTDAVLAAVAHPAHFAP- 429                                                                                            |
| B.flavum                     | FDHVFYSDSGSVSVEVAIKMALQASK-GQGHP-ERTKLLTWRSCYLGDTFTAMSVCDPEN                                                                 |            | B.flavum                     | PYITTSEQCAQICTALHAAVKGK 423                                                                                                  |
| Mtb                          | LDTVFFSDSGSVSVEVAAKMALQYWR-GRGLP-GKRRLMTWRGCYIGDTFLAMSICDPHG                                                                 |            | Mtb                          | PYICTPAEITQITSAMVEVARLVGSLP 437                                                                                              |
| M.leprae                     | LETVFFSDSGSVSVQVAVKMALQYWR-SRGQP-AKRRLMTWRGCYIGDTLTPMSICDPDG                                                                 |            | M.leprae                     | PYICPPAEIAQITSAMVEVAGLVG 436                                                                                                 |
| B.subtilis                   | LTRVFYSDSGAEAMEIALKMAFQYWK-NIGKP-EKQKFIAMKNCYIGDTIGAVSVGSIE-                                                                 |            | B.subtilis<br>M.jannaschii   | PLASTAEELSENVAIMKQAIHEVTSLED- 448                                                                                            |
| M.jannaschii<br>B.sphaericus | LTKVFYSEDGAEAVEIAIKMAYQYYV-LRGDK-GRTKFISVKEOVIGDTVGAMSVGGSE-<br>LQKVFFADNGSSAIEVALKMSFQYHM-QTGKT-QKKRFLALTDAVIGETLGALSVGGVD- | 164        | B.sphaericus                 | PLSITEKEIIYLCDALYEAIKEADL 461<br>PYIITDDEMQFMIQTTKDTIVQFFEEREG 455                                                           |
| H.pyroli                     | MDKCFYADNGSSCVEIALKMSYHAHF-LKNQTRRKKLFLSLSNSYNGETLGALSVGDVK-                                                                 | 162        | H.pyroli                     | PYIITHEEVKKAVAGLVEILDELRKG 436                                                                                               |
|                              | 1 * 11.*1 .111 **1 1 1 1 * *1* .                                                                                             |            |                              |                                                                                                                              |
| S.cerevisiae<br>H.influenzae | SMMHIYNDRLSENIFAQAPSIVDGLPTSQNGFEDHWNAEEVTDLKKQFELHSDXIC<br>GMMHLFHHSLPVQYFLPOPNIPFNESWNDCAIEPLADLLKKKGNEIA                  | 231<br>209 |                              |                                                                                                                              |
| S.marcescens                 | SMHSLYOGYLAPHLFATAPQCRFDEEWREEDIAPFAALLEOHAGEVA                                                                              | 208        |                              |                                                                                                                              |
|                              |                                                                                                                              |            |                              |                                                                                                                              |
| E.coli                       | SMHSLNKGYLPENLFAPAPQSRMDGEWDERDMVGFARLMAAHRHEIA                                                                              | 206        |                              |                                                                                                                              |
| E.herbicola                  | SMHSLWAGYLPDNLFAPAPESRFDGEWDERDIVGFARLMAAHRHEIA                                                                              | 206        |                              |                                                                                                                              |
| B.flavum                     | GMHSLWKGTLPEQIFAPAPPVRGSSPQAISEYLRSMELLIDETVS                                                                                | 204        |                              |                                                                                                                              |
| Mtb                          | GMHSLWTDVLAAQVFAPQVPRDYDPAYSAAFEAQLAQHAGELA                                                                                  | 215        |                              |                                                                                                                              |
| M.leprae                     | GMHSLWTDILARQVFAPQVPRDYDPAYSKAFETQLAQHTPELA                                                                                  | 217        |                              |                                                                                                                              |
| B.subtilis                   | LFHHVYGPLMFESYKAPIPYVYRSESGDPDECRDQCLRELAQLLEEHHEEIA                                                                         | 212        |                              |                                                                                                                              |
| M.jannaschii                 | LFHGVFKPLLFKGYHANPPYCYRCKYHNFKDTDERNEKGCEMECLNEMISLIEKHAEEVF                                                                 | 224        |                              |                                                                                                                              |
| B.sphaericus                 | LYNEVYQPLLLDTVRAQGPDCFRCPFKHHPDSCHAQCISFVEDQLRMHHKEIT                                                                        | 217        |                              |                                                                                                                              |
| H.pyroli                     | LYKDTYTPLLLKNLTTPVPKNDHEIENSLNALKRLLDKHSEEIC                                                                                 | 206        |                              |                                                                                                                              |
|                              |                                                                                                                              |            |                              |                                                                                                                              |
| e                            |                                                                                                                              | 200        |                              |                                                                                                                              |
| S.cerevisiae                 | AVILEPILQGAGGLRPYHPQFLIEVQKLCNQ-YDVLFIMDEIATGFGRTGEIFAFKHCQK                                                                 | 290        |                              |                                                                                                                              |
| H.influenzae                 | ALILEPVVQGAGGMYFYSPTYLVKAQALCKQ-YGILLIFDEIATGFGRTGKLFAAEHAG-                                                                 | 267        |                              |                                                                                                                              |
| S.marcescens                 | AVILEPVVQGAGGMRIYHPTYLKRVRDVVRVAIKLLLIADEIATGFGRTGKLFACEHAQ-                                                                 | 267        |                              |                                                                                                                              |
| E.coli                       | AVIIEPIVQGAGGMRMYHPEWLKRIRKICDR-EGILLIADEIATGFGRTGKLFACEHAE-                                                                 | 264        |                              |                                                                                                                              |
| E.herbicola                  | AVILEPIVQGAGGMRLYHPEVLKRIRRMCDR-EGILLIADEIATGFGRTGKLFACEHAD-                                                                 | 264        |                              |                                                                                                                              |
| B.flavum                     | AIIIEPIVQGAGGMRFHDVALIEGVATLCKK-HDRFLIVDEIATGFGRTGELFATLSNG-                                                                 | 262        |                              |                                                                                                                              |
| Mtb                          | AVVVEPVVQGAGGMRFHDPRYLHDLRDICRR-YEVLLIFDEIATGFGRTGALFAADHAG-                                                                 | 273        |                              |                                                                                                                              |
| M.leprae                     | AVWEPVVQGAGGMRFHDPRYLCDVRDICRR-HDVLLIFDEIATGFGRTGELFAADHCG-                                                                  | 275        |                              |                                                                                                                              |
| B.subtilis                   | ALSIESMVQGASGMIVMPEGYLAGVRELCTT-YDVLMIVDEVATGFGRTGKMFACEHEN-                                                                 | 270        |                              |                                                                                                                              |
| M.jannaschii                 | CVILEGGINGSAGMIPYPDGYIEGVAKACKE-NDVIFILDEVATGFGRTGKMFFCDNEE-                                                                 | 282        |                              |                                                                                                                              |
| B.sphaericus                 | AVIIEPLIQAAAGMKMYPAIYLRRLRELCTO-YDVHLIADEIAVGFGRTGTLFACEQAN-                                                                 | 275        |                              |                                                                                                                              |
| H.pyroli                     | AFIAEPLLQCAGNMHIYSARYLKQAVLLCKQ-KNIHIIFDEIATGFGRTGSMFAYEQCE-                                                                 | 264        |                              |                                                                                                                              |
|                              | * : :: : :* **:*:**** :*                                                                                                     | A VT       |                              |                                                                                                                              |
|                              |                                                                                                                              |            |                              |                                                                                                                              |
| S.cerevisiae                 | YQDQHGISPSDQIKVVPDILCVK6LTSGYMTMSAVVVNDKVASRISSPNSPTGGC                                                                      | 346        |                              |                                                                                                                              |
| H.influenzae                 | ISPDIMCI KALTGGYLTLSASITTTEIAQTICSGEAKC                                                                                      |            |                              |                                                                                                                              |
| S.marcescens                 | VPDILCL KALTGGYMTLSATLTTRHVAETISNGAAGC                                                                                       |            |                              |                                                                                                                              |
| E.coli                       | IAPDILCL KALTGGTMTLSATLTTREVAETISNGEAGC                                                                                      |            |                              |                                                                                                                              |
| E.herbicola                  | ITPDILCLIKALTGGTMTLSATLTTRAVAETIRNGEAGC                                                                                      |            |                              |                                                                                                                              |
| B.flavum                     |                                                                                                                              |            |                              |                                                                                                                              |
| Mtb                          |                                                                                                                              |            |                              |                                                                                                                              |
|                              |                                                                                                                              |            |                              |                                                                                                                              |
| M.leprae                     |                                                                                                                              |            |                              |                                                                                                                              |
| B.subtilis                   |                                                                                                                              |            |                              |                                                                                                                              |
| M.jannaschii                 | LKKLEKPDILCLKKILTGGYLPLAATLTTDEIYNQFLGE-FGESKQ                                                                               |            |                              |                                                                                                                              |
| B.sphaericus                 | ISPDFMCLIK ELTGGYLPLSVVMTTNDVYQAFYDD-YATMKA                                                                                  |            |                              |                                                                                                                              |
| H.pyroli                     | IKPOFLCLKKBISGGYLPLSALLTHNEIYNQFYAP-YEENKA                                                                                   | 305        |                              |                                                                                                                              |
|                              | : **::. * <mark>.</mark> ::.* : :: : :                                                                                       |            |                              |                                                                                                                              |
|                              |                                                                                                                              |            |                              |                                                                                                                              |

**Figure S6**: Multiple sequence alignment of *M. tuberculosis* BioA. Multiple Sequence alignment of *M. tuberculosis* BioA with the BioA sequences from the other species was performed by using ClustalW. Boxes represent the active site residues of BioA.



**Figure S7**: Comparison of structures of sinefungin bound BioA and KAPA bound BioA. (A) Alignment of crystal structures of BioA in complex with sinefungin (green) and BioA in complex with KAPA (red) which displayed the RMSD value of 0.205Å. (B) Alignment of active site residues of BioA in complex with sinefungin (cyan) and BioA in complex with KAPA (green) which displayed an RMSD value of 0.191Å. The PLP of BioA in complex with sinefungin and KAPA are represented in magenta and orange colour, respectively. The figure was generated by using Pymol.

| 20%   | <b>b</b> inhibition at 10 | 0 μg/mL   | -             |                                  |
|-------|---------------------------|-----------|---------------|----------------------------------|
| S.No. | Compound id               | NSC<br>id | Docking score | Percent inhibition at 100 µg/mL* |
| 1     | A1                        | 1009      | -10.59        | 33                               |
| 2     | A5                        | 48602     | -10.69        | 77                               |
| 3     | A6                        | 56397     | -10.58        | 32                               |
| 4     | A11                       | 95154     | -10.74        | 40                               |
| 5     | A12                       | 108404    | -10.60        | 56                               |
| 6     | A15                       | 115767    | -10.53        | 44                               |
| 7     | A18                       | 163457    | -11.30        | 31                               |
| 8     | A23                       | 281774    | -10.89        | 28                               |
| 9     | A24                       | 298889    | -10.74        | 45                               |
| 10    | A25                       | 353454    | -11.34        | 22                               |
| 11    | A26                       | 373094    | -10.26        | 65                               |
| 12    | A27                       | 373236    | -10.70        | 54                               |
| 13    | A28                       | 373240    | -11.24        | 21                               |
| 14    | A30                       | 408904    | -10.69        | 54                               |
| 15    | A31                       | 609446    | -10.60        | 22                               |
| 16    | A34                       | 650017    | -10.59        | 50                               |
| 17    | A35                       | 658421    | -10.85        | 85                               |
| 18    | A36                       | 668266    | -10.74        | 82                               |
| 19    | A39                       | 690377    | -10.58        | 30                               |
| 20    | A40                       | 690380    | -10.64        | 33                               |
| 21    | A42                       | 16468     | -10.46        | 26                               |
| 22    | A48                       | 106111    | -10.53        | 64                               |
| 23    | A49                       | 107702    | -10.33        | 25                               |
| 24    | A51                       | 111575    | -10.42        | 30                               |
| 25    | A55                       | 127713    | -10.36        | 27                               |
| 26    | A56                       | 129519    | -10.49        | 29                               |
| 27    | A57                       | 152518    | -10.32        | 43                               |
| 28    | A61                       | 367105    | -10.44        | 54                               |
| 29    | A62                       | 373238    | -10.65        | 47                               |
| 30    | A64                       | 613565    | -10.33        | 54                               |
| 31    | A65                       | 615614    | -10.47        | 84                               |
| 32    | A68                       | 639914    | -10.54        | 22                               |
| 33    | A70                       | 652821    | -10.35        | 74                               |
| 34    | A71                       | 655494    | -10.46        | 37                               |
| 35    | A72                       | 671897    | -10.36        | 34                               |
| 36    | A73                       | 677026    | -10.42        | 24                               |
| 37    | A79                       | 687803    | -10.43        | 21                               |
| 38    | A80                       | 707084    | -10.43        | 22                               |
| 39    | A81                       | 710329    | -10.38        | 20                               |

Table S1: List of A series compounds that exhibited greater than 20% inhibition at 100 µg/mL

\* Data here depicts the values as the average of atleast two independent experiments.

| than 20% inhibition at 100 μg/mL |          |        |         |                    |
|----------------------------------|----------|--------|---------|--------------------|
| S.No.                            | Compound | NSC id | Docking | Percent inhibition |
|                                  | id       |        | Score   | at 100 µg/mL*      |
|                                  |          |        |         |                    |
| 1                                | X2       | 17490  | 7.30    | 38                 |
| 2                                | X4       | 59310  | 7.27    | 27                 |
| 3                                | X6       | 60622  | 7.31    | 28                 |
| 4                                | X8       | 69356  | 7.38    | 20                 |
| 5                                | X9       | 69360  | 7.27    | 38                 |
| 6                                | X10      | 75500  | 7.50    | 47                 |
| 7                                | X11      | 77534  | 7.33    | 32                 |
| 8                                | X14      | 97308  | 7.41    | 45                 |
| 9                                | X15      | 97752  | 7.39    | 34                 |
| 10                               | X16      | 103111 | 7.32    | 36                 |
| 11                               | X17      | 106062 | 7.39    | 33                 |
| 12                               | X18      | 106728 | 7.35    | 30                 |
| 13                               | X19      | 112336 | 7.30    | 26                 |
| 14                               | X20      | 113521 | 7.47    | 26                 |
| 15                               | X22      | 116631 | 7.31    | 58                 |
| 16                               | X23      | 124222 | 7.55    | 34                 |
| 17                               | X29      | 205574 | 7.50    | 53                 |
| 18                               | X30      | 215214 | 7.28    | 53                 |
| 19                               | X31      | 358779 | 7.33    | 27                 |
| 20                               | X32      | 363071 | 7.29    | 44                 |
| 21                               | X37      | 671451 | 7.26    | 26                 |
| 22                               | X38      | 677807 | 7.34    | 53                 |
| 23                               | X40      | 707079 | 7.47    | 51                 |
| 24                               | X44      | 69576  | 7.19    | 29                 |
| 25                               | X47      | 86505  | 7.20    | 21                 |
| 26                               | X48      | 108405 | 7.21    | 25                 |
| 27                               | X50      | 109838 | 7.25    | 53                 |
| 28                               | X52      | 115981 | 7.18    | 32                 |
| 29                               | X53      | 115984 | 7.23    | 21                 |
| 30                               | X54      | 119447 | 7.20    | 23                 |
| 31                               | X55      | 122433 | 7.26    | 20                 |
| 32                               | X58      | 129077 | 7.22    | 23                 |
| 33                               | X64      | 156171 | 7.19    | 21                 |
| 34                               | X65      | 169450 | 7.18    | 56                 |
| 35                               | X67      | 211542 | 7.20    | 55                 |
| 36                               | X74      | 621516 | 7.18    | 26                 |
| 37                               | X75      | 635330 | 7.18    | 46                 |

Table S2: List of X series compounds that exhibited greater than 20% inhibition at 100  $\mu$ g/mL

\* Data here depicts the values as the average of atleast two independent experiments.

| Compound | MW      | logP^ | logS <sup>\$</sup> |
|----------|---------|-------|--------------------|
| Name     |         | 8-    |                    |
| A5       | 447.567 | 2.39  | -4.86              |
| A26      | 437     | 3.83  | -4.97              |
| A35      | 378.381 | 1.53  | -3.21              |
| A36      | 362.375 | 3.96  | -5.11              |
| A48      | 363     | 3.55  | -4.88              |
| A65      | 342.365 | 2.75  | -4.80              |
| A70      | 362.491 | 3.03  | -4.41              |
| CHM-1    | 283.258 | 2.92  | -3.43              |

**Table S3:** Assessment of the drug like properties of the potential inhibitors of BioA was calculated by AlogPs<sup>[31,32]</sup>.

^ - logP represents partition coefficient of octanol and water

\$-logS represents aqueous solubility of the compound.

**Table S4:** Evaluation of cytotoxicity of compounds in CHO cell line.

| Compound | IC50 in CHO cell line<br>(µg/mL) |
|----------|----------------------------------|
| A5       | >200                             |
| A26      | >200                             |
| A35      | 150                              |
| A48      | >200                             |
| A65      | 50                               |
| A70      | >200                             |
| RIF      | >100                             |