

1 **Supplementary Information**

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3 **Evaluation of Antimicrobial, Enzyme Inhibitory, Antioxidant and**  
4 **Cytotoxic Activities of Partially Purified Volatile Metabolites of Marine**  
5 ***Streptomyces* sp.S2A**

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44 *Bacillus cereus* (E) *Staphylococcus aureus* (F) *Staphylococcus epidermidis* (G) *Bipolaris*  
45 *maydis* (H) *Fusarium moniliforme*.

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47 **Figure S2.** Cytotoxic effect of extract against (A) HT-29 (B) MDA (C) U-87 MG.  
48 Morphological studies show that after treatment with extract, cells shrunk with the formation  
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51 **Figure S3.** GC-Mass spectrum of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-(2-  
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57 methylpropyl) (Commercial compound) against (A) HT-29 (B) MDA (C) U-87 MG.  
58 Morphological studies show that after treatment with compound, cells shrunk with the  
59 formation of crystals and detached from the surface significantly.

60

61 **Figure S6.** Mass spectrum of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-(2-  
62 methylpropyl) (Commercial compound).

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64 **Table S1.** Antimicrobial activity and MIC ( $\mu\text{g/mL}$ ) of pyrrolo[1,2-a]pyrazine-1,4-  
65 dione,hexahydro-3-(2-methylpropyl) (Commercial compound) by broth dilution method.

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67 **Table S2.**  $\alpha$ -glucosidase inhibition and IC<sub>50</sub> values of pyrrolo[1,2-a]pyrazine-1,4-  
68 dione,hexahydro-3-(2-methylpropyl) (Commercial compound).

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71 dione,hexahydro-3-(2-methylpropyl) (Commercial compound).

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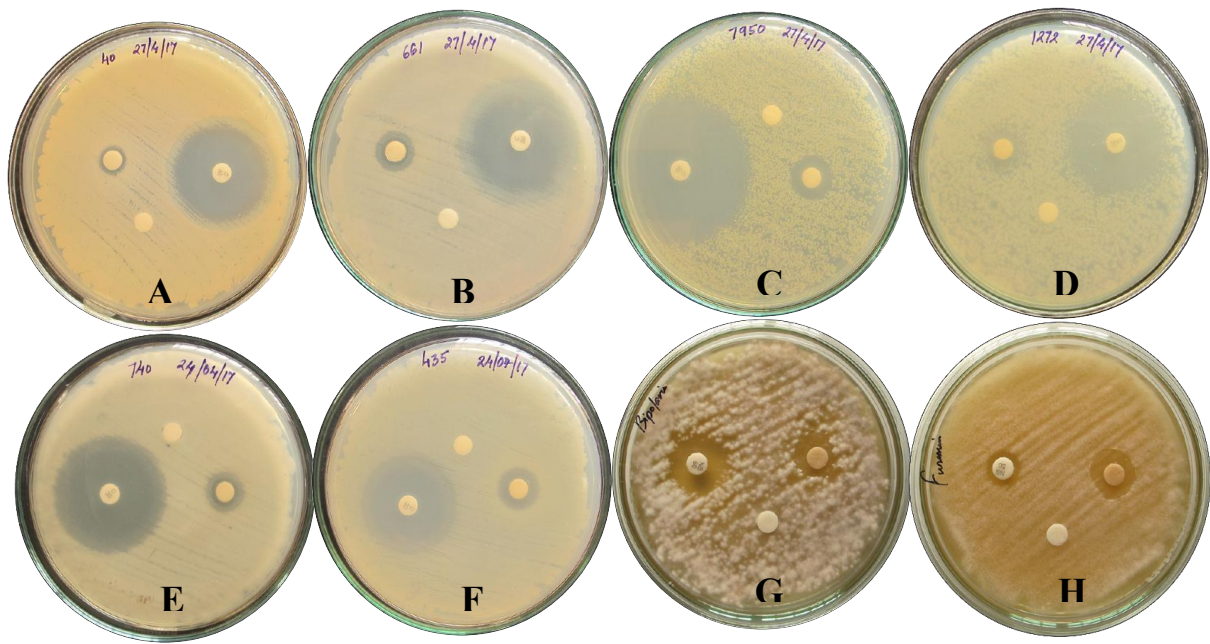
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82 **Figure S1.** Antimicrobial activity of the bioactive extract of the *Streptomyces* sp. on pathogens. **(A)**

83 *Escherichia coli* **(B)** *Klebsiella pneumoniae* **(C)** *Micrococcus luteus* **(D)** *Bacillus cereus* **(E)** *Staphylococcus*

84 *aureus* **(F)** *Staphylococcus epidermidis* **(G)** *Bipolaris maydis* **(H)** *Fusarium moniliforme*.

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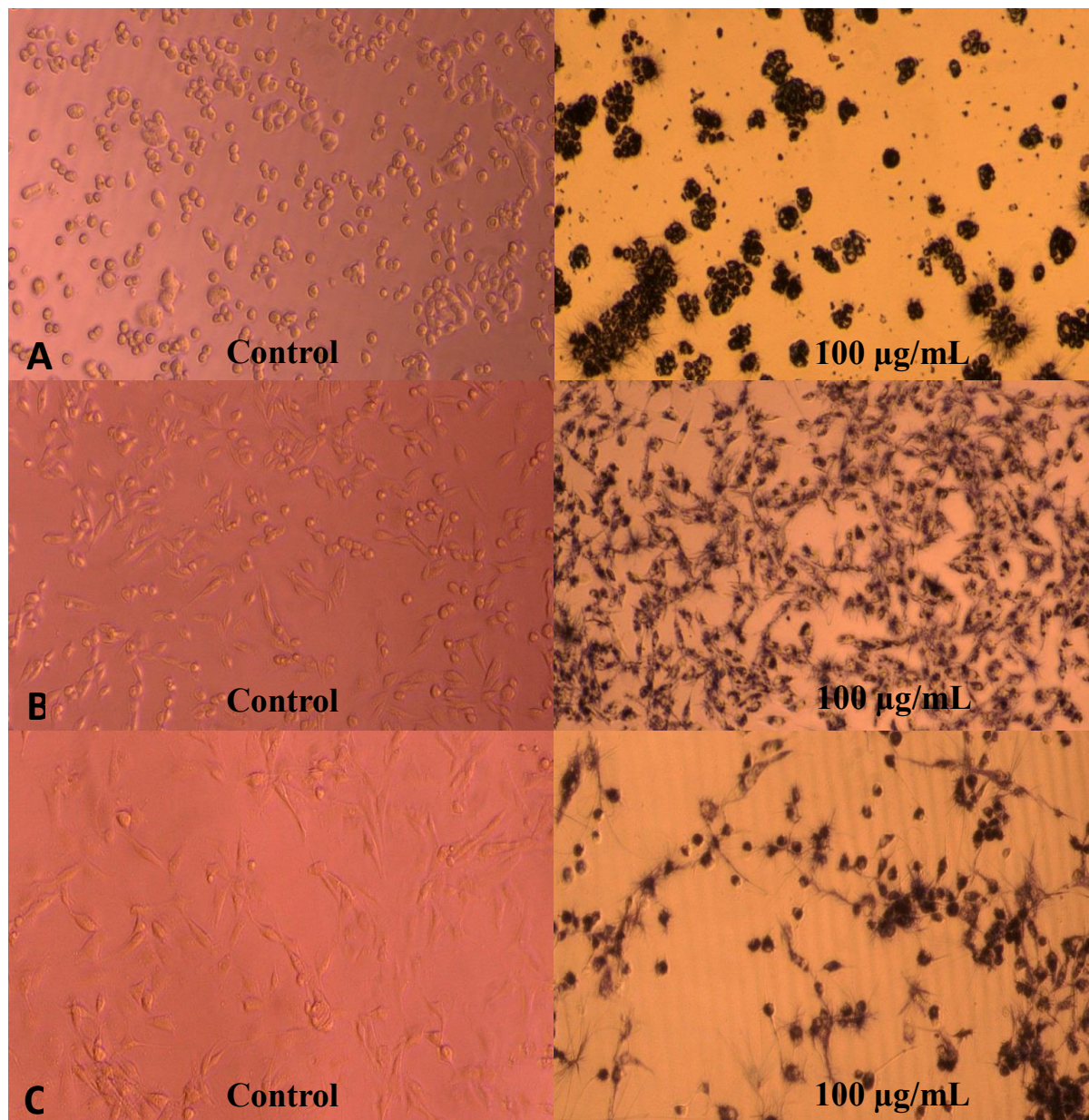
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110 show that after treatment with extract, cells shrunk with the formation of crystals and detached from  
111 the surface.

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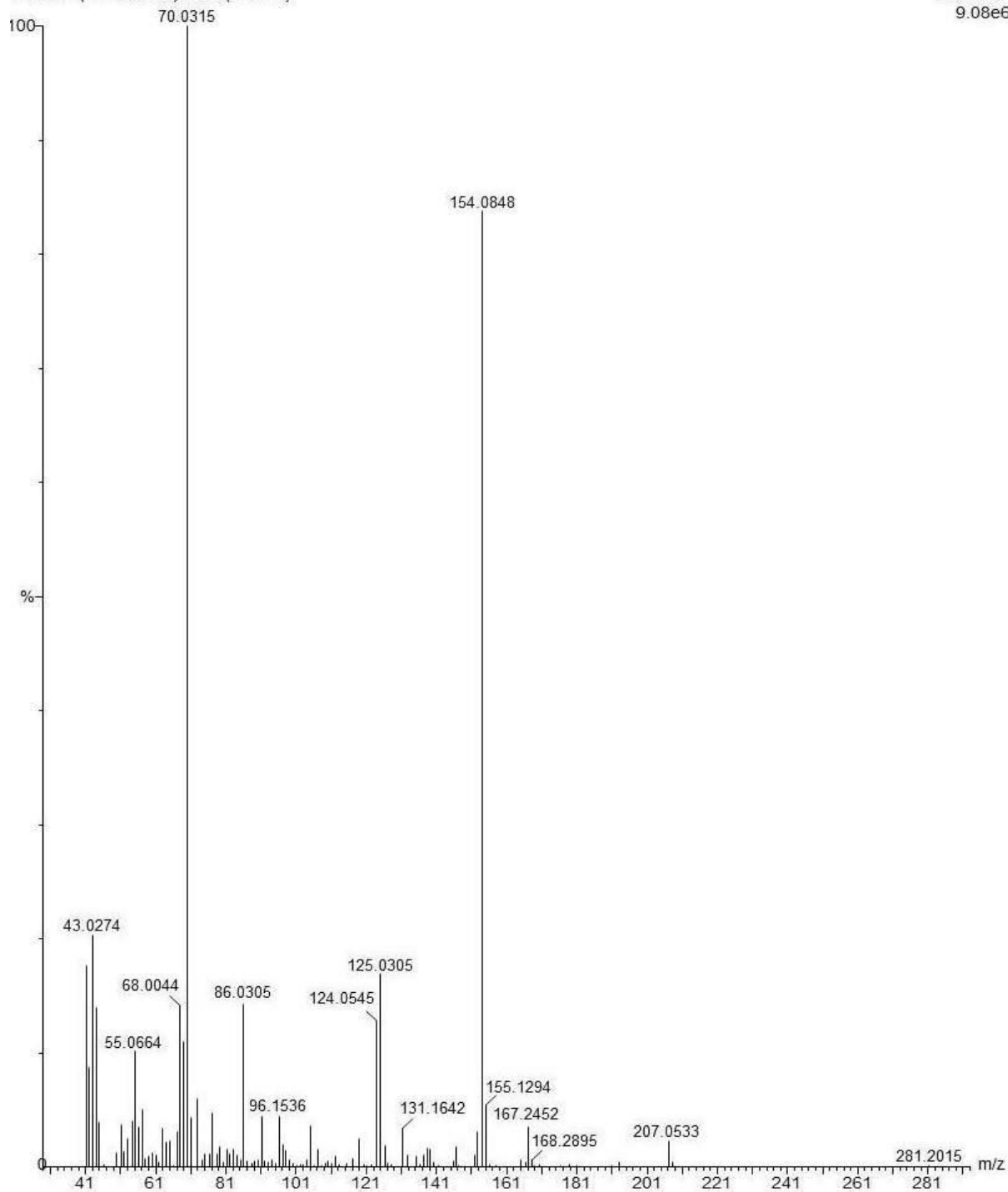
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F-35-37-(17ES-0428)3756 (21.586)

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**Figure S3.** GC-Mass spectrum of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-(2-methylpropyl).

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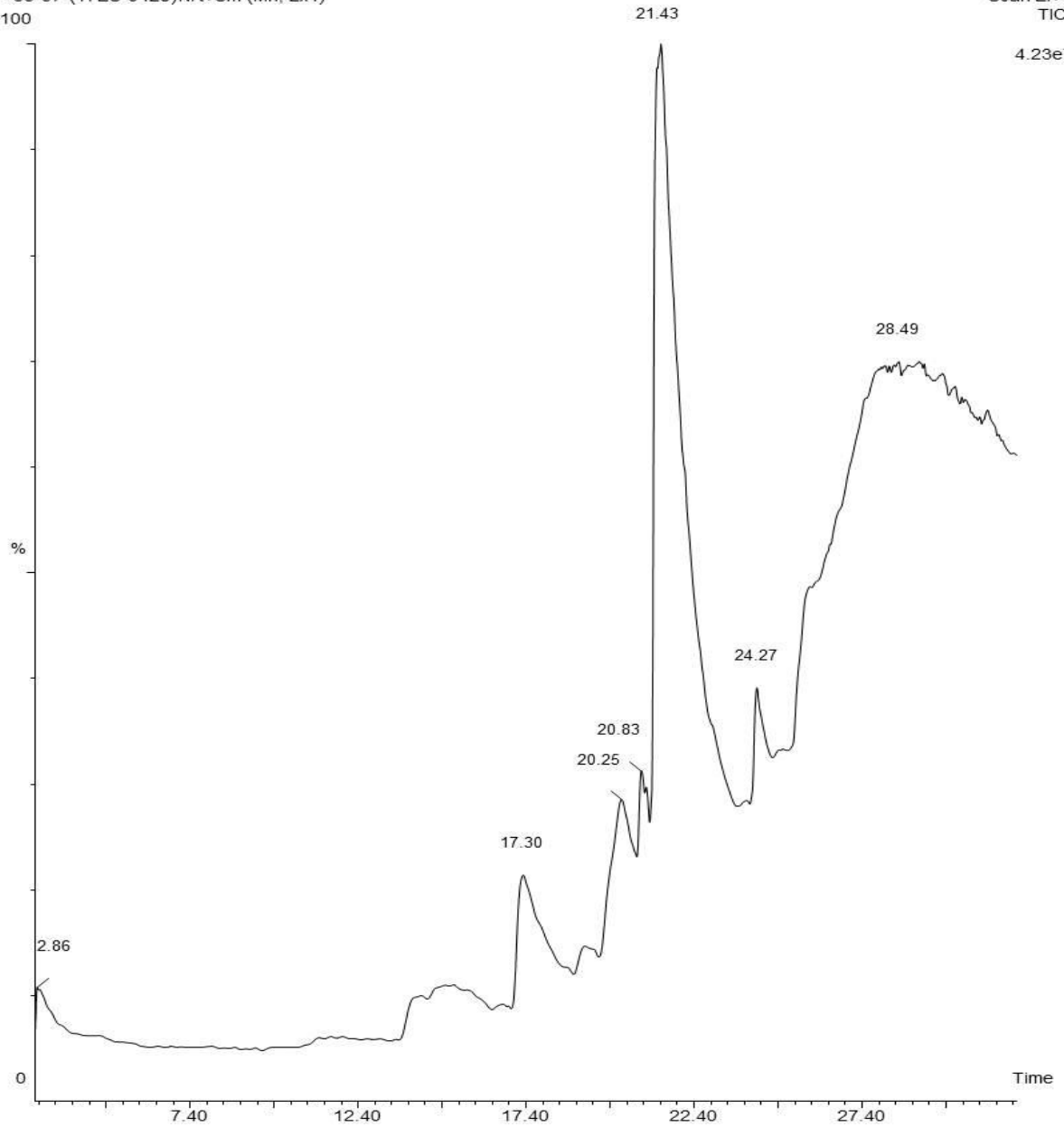
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**Figure S4.** Gas chromatographic spectra of the active extract of *Streptomyces* sp.S2A.

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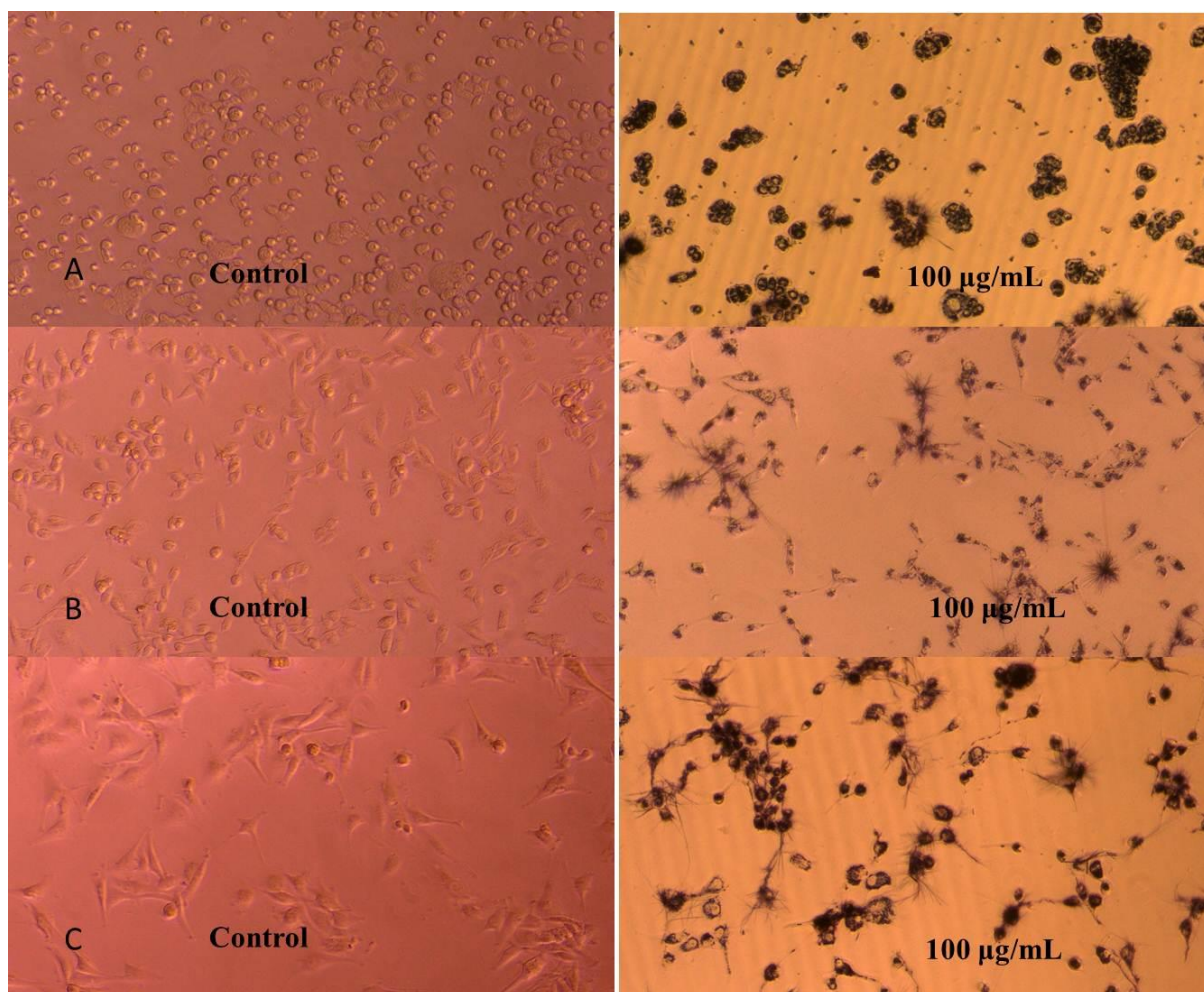
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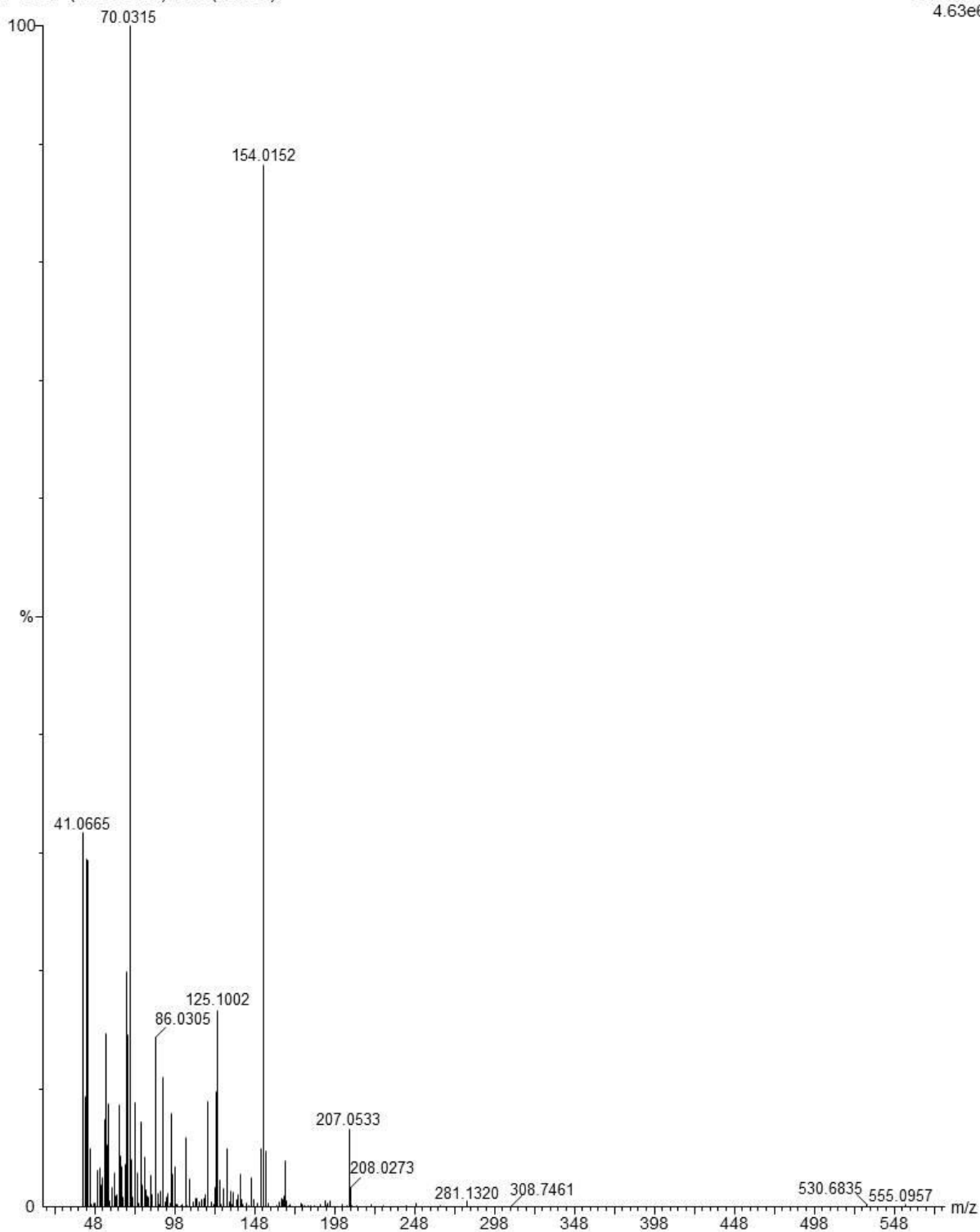
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**Figure S5.** Cytotoxic effect of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-(2-methylpropyl) (Commercial compound) against (A) HT-29 (B) MDA (C) U-87 MG. Morphological studies show that after treatment with compound, cells shrunk with the formation of crystals and detached from the surface significantly.

F-35-37-(17ES-0428)3864 (22.126)

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**Figure S6.** Mass spectrum of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-(2-methylpropyl)  
(Commercial compound)



148 **Table S1.** Antimicrobial activity and MIC ( $\mu\text{g/mL}$ ) of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-  
 149 (2-methylpropyl) (Commercial compound)by broth dilution method.

Test microorganisms	Zone of inhibition (mm)		MIC ( $\mu\text{g/mL}$ )
<b>Bacteria</b>	<b>Commercial compound</b>	<b>Antibiotics (Chloramphenicol)</b>	
<i>Klebsiella pneumoniae</i> MTCC 661	20 $\pm$ 1.2	28 $\pm$ 0.6	7.81
<i>Micrococcus luteus</i> MTCC 7950	19 $\pm$ 0.2	24 $\pm$ 0.4	1.95
<i>Escherichia coli</i> MTCC 40	21 $\pm$ 0.4	22 $\pm$ 1.6	-
<i>Bacillus cereus</i> MTCC 1272	16 $\pm$ 0.9	28 $\pm$ 1.7	-
<i>Staphylococcus epidermidis</i> MTCC 435	16 $\pm$ 0.8	20 $\pm$ 1.8	3.90
<i>Staphylococcus aureus</i> MTCC 740	22 $\pm$ 1.4	30 $\pm$ 0.6	3.90
<b>Fungi</b>		<b>(Nystatin)</b>	
<i>Aspergillus flavus</i> MTCC 2590	-	-	-
<i>Bipolaris maydis</i>	-	-	-
<i>Alternaria alternata</i> MTCC 1362	-	-	-
<i>Fusarium moniliforme</i> MTCC 6576	14 $\pm$ 1.0	20 $\pm$ 0.7	62.50

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151 **Table S2.**  $\alpha$ -glucosidase inhibition and IC<sub>50</sub> values of pyrrolo[1,2-a]pyrazine-1,4-  
 152 dione,hexahydro-3-(2-methylpropyl) (Commercial compound)

Concentration ( $\mu\text{g/ml}$ )	Inhibition % (Commercial compound)	IC <sub>50</sub> ( $\mu\text{g/ml}$ ) (Commercial compound)	Inhibition % (Acarbose)	IC <sub>50</sub> ( $\mu\text{g/ml}$ ) (Acarbose)
6.25	14.11 $\pm$ 2.16		30.21 $\pm$ 0.33	
12.5	16.03 $\pm$ 1.90		41.01 $\pm$ 0.62	
25	23.90 $\pm$ 0.64	117.80	61.74 $\pm$ 1.51	17.91
50	38.12 $\pm$ 1.10		70.02 $\pm$ 1.12	
100	48.23 $\pm$ 1.01		84.83 $\pm$ 2.36	
200	61.22 $\pm$ 0.13		88.63 $\pm$ 2.33	

153 **Table S3.**  $\alpha$ -amylase inhibition and IC<sub>50</sub> values of pyrrolo[1,2-a]pyrazine-1,4-dione,hexahydro-3-  
 154 (2-methylpropyl) (Commercial compound)

Concentration ( $\mu\text{g/ml}$ )	Inhibition % (Commercial compound)	IC <sub>50</sub> ( $\mu\text{g/ml}$ ) (Commercial compound)	Inhibition % (Acarbose)	IC <sub>50</sub> ( $\mu\text{g/ml}$ ) (Acarbose)
	<b>EA extract</b>		<b>Acarbose</b>	
6.25	5.30 $\pm$ 0.91		16.43 $\pm$ 1.18	
12.5	16.32 $\pm$ 0.37		31.30 $\pm$ 0.60	
25	20.14 $\pm$ 1.18	164.24	57.04 $\pm$ 2.01	21.07
50	29.47 $\pm$ 2.06		79.01 $\pm$ 0.61	
100	44.73 $\pm$ 2.34		81.06 $\pm$ 0.51	
200	51.97 $\pm$ 0.93		91.41 $\pm$ 1.29	

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