Synthesis of amino acid-naphthoquinones and \textit{in vitro} studies on cervical and breast cell lines

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1. Infrared characterization

Amino acids-1,4-naphthoquinone derivatives:

(3a)

(3b)
Amino acids-2,3-dichloronaphthoquinone derivatives:

(3e)

(4a)
2. NMR characterization.

Amino acids-1,4-naphthoquinone derivatives:

(3a)

\[ \text{NG-2.1.fid} \]

\(^\text{1}H\) NMR (300 MHz, DMSO-\(d_6\))

(3b)

\[ \text{NA-1.1.fid} \]

\(^\text{1}H\) NMR (300 MHz, DMSO-\(d_6\))
\textbf{(3c)}

\textbf{\textsuperscript{1}H NMR (300 MHz, DMSO-\textit{d}_6)}

\textbf{\textsuperscript{13}C NMR (75 MHz, DMSO)}
(3d)

H NMR (300 MHz, DMSO-d$_6$)

(3e)

H NMR (300 MHz, DMSO-d$_6$)
Amino acids-2,3-dichloronaphthoquinone derivatives:

(4a)
(4b)

$^1$H NMR (400 MHz, Methanol-\textit{d$_4$})

$^{13}$C NMR (101 MHz, MeOD)
$^3$H NMR (400 MHz, DMSO-$d_6$)

$^{13}$C NMR (101 MHz, DMSO)
(4d)

$^1$H NMR (300 MHz, DMSO-$d_6$)

(4e)

$^1$H NMR (301 MHz, DMSO-$d_6$)
3. Mass spectrometry characterization of compounds 3c, 3e, 4b, 4c and 4e.

\((3c)\)
