INTRODUCTION

The use of medicinal plant extracts for the treatment of human diseases is an ancient practice and has greatly increased in recent years. Cancer is one of the most frequent causes of death worldwide, with an estimated 9.6 million deaths in 2018 [1]. Indonesia has the highest breast cancer incidence in Southeast Asia and ranks 9th worldwide in terms of breast cancer mortality [2]. Indonesia also has one of the highest breast cancer death rates in the world, with an estimated 324,000 deaths in 2020 [3]. Breast cancer is the second most common cause of cancer death in developed countries and the fifth most common cause of cancer death in less developed countries [4].

Methods of breast cancer treatment include surgery, chemotherapy, radiation, hormonal therapy, and targeted therapy. However, these treatments often come with severe side effects and can lead to recurrence [5]. Therefore, there is a need for new, effective, and less toxic treatments for breast cancer.

OUTLINE OF THE STUDY

This study was carried out to investigate the cytotoxic activity of Picria fel-terrae Lour. herb fractions against 4T1 and MCF-7 breast cancer cells.
Table 1: IC₅₀ value of n-hexane, ethyl acetate, and ethanol fraction of *P. fel-terrae* Lour. herbs toward 4T1 and MCF-7 cells

<table>
<thead>
<tr>
<th>Fraction</th>
<th>4T1 IC₅₀ (µg/mL)</th>
<th>MCF-7 IC₅₀ (µg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-hexane</td>
<td>234.10±7.85</td>
<td>84.62±1.44</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>50.49±1.07</td>
<td>56.79±0.22</td>
</tr>
<tr>
<td>Ethanol</td>
<td>212.53±7.55</td>
<td>235.51±4.77</td>
</tr>
</tbody>
</table>

IC₅₀: Inhibitory concentration 50%

(Sigma) in 0.01N HCl (Merck) was added to dissolve the formazan crystals. The cells were incubated for 24 h in room temperature and protected from light. After incubation, the cells were shaken, and absorbance was measured using enzyme-linked immunosorbent assay reader at λ 595 nm. The data which were absorbed from each well was converted to percentage of viable cells [20,21].

The equation to determine viability of cells:

\[

\text{Viability} = \left( \frac{\text{Abs of treatment} - \text{Abs of medium}}{\text{Abs of control cells-Abs of medium}} \right) \times 100%

\]

RESULTS AND DISCUSSION

Plant authentication

Plant authentication was identified in Research Centre for Biology, Indonesian Institute of Science, Bogor, and the voucher specimen was deposited in herbarium with number of 332/IPH.1.01/If.07/II/2016 deposited in Indonesian Institute of Science, Bogor, and the voucher specimen was deposited in herbarium with number of 332/IPH.1.01/If.07/II/2016 and was showed species of *P. fel-terrae* (Lour.).

Inhibitory concentration 50% (IC₅₀)

MTT method was used to determine cell viability after incubation for 24 h. Cytotoxic activity of n-hexane, ethyl acetate, and ethanol fraction of herbs of *P. fel-terrae* Lour. was shown in Table 1.

In every treatment, n-hexane, ethyl acetate, and ethanol fraction were shown to inhibit cells growth. The highest IC₅₀ value was obtained from EAF of *P. fel-terrae* Lour. herbs of 50.49 ± 1.07 µg/mL toward 4T1 cell lines and 56.79 ± 0.22 µg/mL toward MCF-7 cell lines. The estimated cytotoxicity of natural product is related to content of active compound in these plants including *P. fel-terrae* Lour. flavonoids, saponins, and tannins estimated as active compounds [13].

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