ABSTRACT

SECONDARY METABOLITES FROM MYANMAR MEDICINAL PLANT (*Clausena excavata*) AND THEIR ANTIOXIDANT, ANTIDIABETIC, AND ANTICANCER ACTIVITITES

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In the course of searching bioactive constituents from Myanmar medicinal plant (*Clausena excavata*), a total of 17 isolated and modified compounds were reported from this species. Among them one new compound, TMT-**4**, (excavatin-A) was isolated together with six known compounds; TMT-**1** (nordentatin), TMT-**2** (dentatin), TMT-**3** (heptaphylline), TMT-**5** (mukonine), TMT-**6** (xanthoxyletin), and TMT-**7** (7-hydroxyheptaphylline) were naturally isolated from *C. excavata*. Moreover, 10 new pyranocoumarin benzoate derivatives (TMT-**1a** to **TMT-1j**), were semi-synthesized from TMT-**1** (nordentatin). All structures were elucidated by using spectroscopy methods. All the isolated and modified compounds were tested on their antioxidant activity by DPPH assay, antidiabetic activity by using α-glucosidase inhibition assay and cytotoxicity by MTT assay. Among isolated compounds, TMT-**1** showed the highest antioxidant activity with IC_{50} values 0.02 mM. Moreover, TMT-**1** exhibited strong inhibition activity against maltase (IC_{50} 5.45 µM) and sucrase (IC_{50} 43.57 µM), whereas TMT-**2** showed high inhibition against maltase and yeast enzymes. Moreover, inhibition activity modified compounds against on yeast α-glucosidase were performed and compared with the parent compound (TMT-**1**). Of modified compounds, TMT-**1b** exhibited highest inhibition against yeast α-glucosidase with IC_{50} values 1.54 mM (where, acarbose IC_{50} values 7.57 mM was used as standard) more inhibit than parent compound TMT-**1** (nordentatin, 37.62 mM) on yeast α-glucosidase enzymes. In addition, the evaluation of cell viability of *Hela* (cervical cancer) and T47D (breast cancer) of isolates and semi-synthesized compounds were performed. Among tested compounds, new compound TMT-**4** (excavatin-A) showed the highest cell cytotoxic activity on hela (IC_{50}, 44.5 µM) and on the other hand, TMT-**1** (nordentatin) showed the highest values on T47D (IC_{50} 41.3 µM).

Keywords: Clausena excavata, excavatin-A, nordentatin, dentatin, heptaphylline, 7-hydroxyheptaphylline, xanthoxyletin, mukonine, pyranocoumarin benzoates, antioxidant, α-glucosidase inhibitor, Hela, T47D