

ORAL PRESENTATIONS

COMPARATIVE ANTIBACTERIAL ACTIVITY OF RED AND BLACK *Antidesma buni* FRUIT EXTRACTS AGAINST *Escherichia coli*

Naruwat Pakdee¹, Panicha Pongnaratorn¹, Anake Kijjoa², Ronnachai Poowanna^{1*}

¹Department of Thai Traditional Medicine, Faculty of Natural Resources, Rajamangala University of Technology Isan, Sakon Nakhon Campus, Rae Subdistrict, Phang Khon district, Sakon Nakhon, 47160, Thailand

²School of Medicine and Biomedical Sciences (ICBAS) and CIIMAR, Universidade do Porto, Rua de Jorge Viterbo Ferreira, 228, 4050-313 Porto, Portugal

*Corresponding author: Ronnachai.pw@rmuti.ac.th

Antidesma buni (L.) Spreng. (mao) is an indigenous medicinal fruit widely distributed in Southeast Asia and is recognized as a rich source of phenolic compounds, flavonoids, and anthocyanins with diverse biological activities. As antimicrobial resistance continues to emerge as a major global health concern, medicinal plants have attracted increasing attention as potential sources of novel antibacterial agents. This study aimed to compare the antibacterial activities of red and black *A. buni* fruit extracts against *Escherichia coli* and to evaluate the influence of extraction methods on their antibacterial efficacy.

Fresh red and black fruits of *A. buni* were extracted using two different extraction methods: aqueous juice extraction and extraction with 95% ethanol. Antibacterial activity against *E. coli* was initially evaluated using the disc diffusion method. The minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were subsequently determined to assess the inhibitory and bactericidal activities of each extract.

The ethanolic extracts exhibited markedly greater antibacterial activity than the aqueous extracts. The ethanolic extract of red fruits produced the largest inhibition zone (18.2 mm), followed by the ethanolic extract of black fruits (16.1 mm). The MIC and MBC values of the red fruit ethanolic extract were 0.50 mg/mL and 1.00 mg/mL, respectively, whereas those of the black fruit ethanolic extract were 0.98 mg/mL and 1.95 mg/mL, respectively. In contrast, aqueous extracts demonstrated weaker antibacterial activity, as indicated by smaller inhibition zones and higher MIC and MBC values.

The superior antibacterial activity of the ethanolic extracts suggests that ethanol is more effective than water for extracting antibacterial phytochemicals from *A. buni* fruits. The stronger activity observed in red fruits is likely associated with their higher concentrations of phenolic compounds, flavonoids, and anthocyanins. Among all tested extracts, the ethanolic extract of red *A. buni* fruits demonstrated the greatest antibacterial activity against *E. coli*. These findings highlight the potential of *A. buni* as a promising natural source of antibacterial agents and provide a scientific basis for further phytochemical characterization, mechanism-of-action studies, and the development of plant-based antibacterial products.

Keywords: *Antidesma buni*; antibacterial activity; *Escherichia coli*; fruit extract; medicinal plants.