fold, whereas 25OHD3 improved 4.5-fold when tested using the provided calibrator (CAL) and control (CTRL) samples. A linear correlation was observed for 25OHD2 (R^2=0.9895; y=0.002x-0.0226) and 25OHD3 (R^2=0.9856; y=0018x-0.0523) at 50 nM, 150 nM and 250 nM concentrations, respectively.

CONCLUSION: Improvement of the method enabled the protocol to be used in a diagnostic laboratory setting, yielding more cost-effective, sensitive, and reliable results, although a proper method validation was necessary to achieve this goal.

KEYWORDS: Vitamin D Metabolite, 25-Hydroxyvitamin D, Cost-effective Diagnostic Tool.

EP_013

ANTIVIRAL POTENTIAL OF *KELULUT* HONEY AGAINST SARS-COV-2

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INTRODUCTION: The ongoing spread of the SARS-CoV-2 Omicron variant continues to pose global health challenges, harbouring multiple sites of mutations. This variant exhibits enhanced immune evasion capabilities, raising concerns about the effectiveness of current vaccine strategies. Meanwhile, *kelulut* honey (KH) has emerged as a promising functional food, distinguished by its distinctive flavour and bioactive properties.

OBJECTIVE(S): This study aimed to investigate the antiviral potential of KH against SARS-CoV-2.

MATERIALS & METHODS: KH was obtained from Bukit Kuin 2, in Kuantan, Pahang, Malaysia (3°52'54.9"N 103°12'27.4"E). The antiviral potential of KH was assessed by investigating its ability to inhibit both the wild-type and Omicron SARS-CoV-2-induced cytopathic effect (CPE) in Vero E6 cells (ATCC-CRL-1586). Nirmatrelvir was used as a reference drug. Experiments were done in biological and experimental replicates (n = 9).

RESULTS: Both KH and nirmatrelvir caused dose-dependent inhibition of CPE-induced activity by both wild-type and Omicron SARS-CoV-2 variants. For the wild-type SARS-CoV-2, 1H and 4H-pretreatment with KH at a non-cytotoxic concentration of 2.5% (v/v) inhibited CPE-induced activity by 56.7 ± 9.96 % (IC_{50} = 7.52% v/v) and 40.9 ± 11.6 % (IC_{50} = 9.3% v/v), respectively. Notably, KH at 2.5% (v/v) showed higher inhibition of CPE-induced activity against the Omicron variant, with 114.3 ± 7.84 % (IC_{50} = 2.36% v/v) and 92.7 ± 4.44 % (IC_{50} = 1.76% v/v) observed after 1H- and 4H-pretreatment, respectively. In comparison, nirmatrelvir at a concentration of 6.25 µM exhibited 111.89 ± 23.55 % (IC_{50} = 1.8 µM) and 121.6 ± 15.25 % (IC_{50} = 2.11 µM) inhibition of CPE-induced activity against wild-type SARS-CoV-2 for 1H- and 4H-pretreatment, respectively. For the Omicron variant, nirmatrelvir showed 140.3 ± 11.1% (IC_{50} = 2.14 µM) and 117.1 ± 7.05 % (IC_{50} = 2.24 µM) inhibition of CPE-induced activity at 6.25 µM for 1H- and 4H-pretreatment.

CONCLUSION: KH exhibits antiviral activity against SARS-CoV-2 wild-type and Omicron variants, as indicated by its ability to inhibit the induced cytopathic effect upon viral infection onto Vero E6 cells. These findings suggest that KH could serve as a complementary or alternative therapeutic against CoV-2 infections.

KEYWORDS: Antiviral, Cytopathic Effect, *Kelulut* Honey, Omicron, SARS-CoV-2

EP_014

BIOACCUMULATION OF HEAVY METALS IN SEAWEED FROM EAST MALAYSIA

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INTRODUCTION: Heavy metal pollution in coastal areas is a global environmental and health concern due to its ability to bioaccumulate. Seaweed which is widely cultivated and sold in East Malaysia, may be affected by this contamination.

OBJECTIVE(S): This study aimed to determine the levels of heavy metals in seaweed samples collected from Sabah and Sarawak.

MATERIALS & METHODS: A total of 22 samples from seven seaweed species were collected from nine locations across Sabah and Sarawak, including seaweed farms and markets. Samples were freeze-dried, ground into fine powder, and digested using a multiwave digestion system. Heavy metal concentrations were then measured using inductively coupled plasma mass spectrometry (ICP-MS) for ten elements: arsenic (As), aluminium (Al), chromium (Cr), nickel (Ni), copper (Cu), zinc (Zn), selenium (Se), cadmium (Cd), mercury (Hg), and lead (Pb).