Dryobalanops is one of the genera in the Dipterocarpaceae family, which is distributed as major species in emergent canopy of Lambir Forest and Sarawak lowland dipterocarps forest. The genus is very unique, as there are only seven species available in the whole world, which confined to the tropical forests of West Malesia. The chemical constituents of Dipterocarpaceae are reported to possess various biological activities such as cytotoxicity, antiviral, antibacterial and anti-inflammatory activities. The aims of this study are to isolate secondary metabolites, to determine their antibacterial, DPPH scavenging and cytotoxic activities, to study structure-activity relationship, and to propose biogenesis pathway and chemotaxonomic significance in Dryobalanops. The dried powder of the stem bark of D. aromatica, D. lanceolata, D. rappa and D. becarii were macerated with acetone and evaporated under reduced pressure. The crude acetone extract was subjected to vacuum liquid chromatography to give several fractions. Purification of fraction with combination of several chromatography techniques gave four new oligostilbenoid derivatives; malaysianol A (1), B (2), C (3) and D (4), and a new galloyglucoside derivative; malaysin A (5), together with 15 known oligostilbenoid (6-20) and six known non-oligomeric compounds (21-26). The chemical structures of isolated compounds were elucidated as also shown by the infrared data. Magnetic susceptibility suggests square planar as bidentate ligands, coordinating through the imine N and phenolic O donor atoms, by single crystal X-ray crystallography. It revealed that these Schiff bases behave NiL1c, NiL1d, PdL2a, PdL2d, PdL3b, PdL3c, PdL3d and NiL3d have been solved susceptibility. The molecular geometries of ten complexes namely PdL1c, PdL1d, PdL2a, PdL2d, PdL3b, PdL3c, PdL3d and NiL3d have been solved in a 2:1 molar ratio. All the synthesized ligands and complexes have been characterized using CHN elemental analysis, infrared, 1H and 13C NMR. UV-Visible, melting point determination, molar conductance and magnetic susceptibility. The molecular geometries of ten complexes namely PdL1c, PdL1d, NiL1c, NiL1d, PdL2a, PdL2d, PdL3b, PdL3c, PdL3d and NiL3d have been solved by single crystal X-ray crystallography. It revealed that these Schiff bases behave as bidentate ligands, coordinating through the imine N and phenolic O donor atoms, as also shown by the infrared data. Magnetic susceptibility suggests square planar

This study reports the synthesis, characterization and catalytic activities of palladium(II) Schiff base complexes, both as homogeneous and MCM-41 supported heterogeneous catalysts for cross-coupling C-C bond formation reactions. Three broad groups of inexpensive Schiff base ligands (L1, L2 and L3) have been synthesized through condensation process between four benzylamine derivatives with aldehyde or ketone in 1:1 molar ratio. 12 ligands and 20 metal complexes of Pd(II) and Ni(II) have been successfully obtained. The metal complexes were prepared through the complexation reaction between the Schiff base ligands with Pd(II) and Ni(II) acetates in a 2:1 molar ratio. All the synthesized ligands and complexes have been characterized using CHN elemental analysis, infrared, 1H and 13C NMR. UV-Visible, melting point determination, molar conductance and magnetic susceptibility. The molecular geometries of ten complexes namely PdL1c, PdL1d, NiL1c, NiL1d, PdL2a, PdL2d, PdL3b, PdL3c, PdL3d and NiL3d have been solved by single crystal X-ray crystallography. It revealed that these Schiff bases behave as bidentate ligands, coordinating through the imine N and phenolic O donor atoms, as also shown by the infrared data. Magnetic susceptibility suggests square planar

Mukim Tg Kupang and its adjacent coastal habitats harbour a rich variety of seagrass meadows, mangroves and rocky shores which are home to myriad endangered species and other cryptic fauna. However this area is slated for development and the local fishing community who depend on it needs to be equipped with the ability to cope with inevitable urbanisation and change. This case study proposed a long-term science-based environmental education program aimed at a primary audience of local children and youth (aged 6-18, n=34) that would disseminate conservation knowledge and encourage environmentally-friendly behaviour and a conservation mindset to the wider community. After two years of the education program, another year on-site focussed on developing community empowerment through an extended initiative that roped in older youth (aged19-28) and local women, and this proved to be the key success factor in the study. Document analysis and the collation of local ecological knowledge by local youth as well as their habitat

The importance of information security in protecting data and information has increased due to the increased use of computers and the Internet. Similarly, with one of its exciting subfields i.e. information hiding. Information hiding is a technology where the secret-messages are hidden inside other files (e.g image files). One of the areas that are popular now applying this technology is digital image steganography (image steganography). In image steganography, the most popular and widely used techniques is the least significant bit (LSB) that hide data into a cover-image in a spatial and discrete cosine transform (DCT) domain as well. Beside the LSB technique, there is other technique that is also influential i.e support vector machine (SVM) normally used to strengthen the embedding algorithm. Whatever techniques used in the image steganography

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In the antibacterial assay, flexuosol A (16) and upunaphenol D (18) showed moderately antibacterial activity against S. epidermidis, S. aureus, S. xylosus with MIC value of 50.0/16.7, 66.7/33.3 and 50.0/16.7 μM, respectively. In the cytotoxic assay, vasicinone C (20) were found to be moderately active against A549 cell line (IC50 11.8 μM), as well as α-viniferin (11) and ampelopsin E (12) against MCF-7 cell line (IC50 23.1 and 21.0 μM, respectively), while other compounds were either weak or not active. In the DPPH assay, malaysianol A (1), flexuosol A (16) and vasicinone B (19) displayed great scavenging activity with IC50 values 15.7, 15.0 and 11.8 μM, respectively. In the structure-activity relationship study, the scavenging activity of oligostilbenoids depend on the number of hydroxyl group and their stereochemistry, otherwise no definitive correlation between unit structures of oligostilbenoid and cytotoxicity was observed, but its conformation seem to be responsible for the cytotoxic properties.

Pd(II) and Ni(II) complexes, while non-electrolytic behaviour indicated the absence of ions in chloroform. PdL3a, PdL3b, PdL3c and PdL3d have been chosen to catalyze the Heck and Suzuki cross-coupling reactions because of their good performances in the screening phase. Three parameters have been chosen for optimization of the reaction conditions, which were types of bases, catalyst loadings and reaction temperatures. This study has found that the complexes performed well at a relatively low catalyst loading of 1 mmol%. They were effective catalysts for Heck reaction of iodobenzene with methyl acrylate to form methyl cinnamate and for Suzuki reaction of iodobenzene with phenylboronic acid to form 1,1’-biphenyl where the conversions of iodobenzene reached up to 100% at 100°C within 24 hours of reaction time. For the heterogeneous catalytic investigations, two modified MCM-41 moieties, namely MCM-41-Pd-Ovan and MCM-41-PdL3c were investigated. The PdL3c complex was chosen for heterogeneous catalytic study due to its superior performance during homogeneous catalysis study. The synthesized MCM-41 supported species were characterized using CHN elemental analysis, ICP-OES, infrared, XRD, TGA-DTA, BET and nitrogen sorption and FESEM-EDX analyses. ICP-OES data revealed that the palladium loading in MCM-41-Pd-Ovan and MCM-41-PdL3c were 0.259 and 0.097 mmolg⁻¹, respectively. Both were found to be moderately good catalysts. Some leaching of active species in reaction mixtures especially for the MCM-41-Pd-Ovan was detected. The leaching was found to be less extensive for the MCM-41-PdL3c. As additional work in this study, six metal complexes namely PdL1c, PdL1d, PdL3d, NiL1c, NiL1d and NiL3d have undergone antibacterial investigation as a representatives group. The complexes have shown a little or no inhibition against E. coli, B. subtilis and S. aureus, most likely due to the low solubility of the complexes in DMSO solvent.

Field, the main purpose is to keep the existence of the secret-message secret. But many of the techniques previously proposed have failed to attain this main purpose. The primary concern that contribute to this problem is the non-random changes on a cover-image that constantly occurred after the embedding process. Secondly, the non-robustness of embedding algorithm to image processing operation. Therefore in this research, the new model is proposed called StegaSVM-Shifted LSB model in DCT domain to preserve the imperceptibility and increase the robustness of stego-images. The StegaSVM-Shifted LSB model that has been proposed based on the spectroscopic data evidences and comparison with reported authentic data. Biogenetically, the biosynthesis routes of non-oligomeric compounds were formed from the shikimate pathway, while oligomeric compounds were from the combination of shikimate and acetate malonate pathways. Based on the radical species and their condensation types, 19 oligostilbenoids isolated from this study were formed from the oxidative coupling reaction of two radicals with active site at carbons C-8 and C-14 (C8-C14 type), carbons C-8 and C-8 (C8-C8 type), carbons C-3 and C-8 (C3-C8 type), and oxygen O-13 and carbon C-8 (C7-C14 type). The finding of oligostilbenoids with the condensation types C3-C8 and C7-C14 are not commonly found in Dipterocarpaceae family. Based on the chemotaxonomic study, the presence of several compounds that were only found in the tribe Dipterocarpaceae and never reported in the tribe Shoreeae supported the previous studies on the morphological character that suggested the placement of Dryobalanops under the tribe Dipterocarpaceae.

monitoring data resulted in an assessment of local natural resources and provide an indication of the habitats' potential economic value. A paired t-test of the primary audience’s (n=31) pre- and post-test results indicated significant knowledge gain while the one-way ANOVA and the Newman-Keuls post hoc test demonstrated significant learning across content categories, with the history/socioeconomics topics being significantly different from the rest. Extensive qualitative analysis through post-program interviews, structured observation checklists, detailed field notes and other sources, supplemented by triangulation of data for additional reliability and validity showed both intra- and intergenerational information dissemination to a secondary audience of local and visiting peers and elders. The emergent community education and empowerment framework and the Kelab Alami methodology are proposed as a model for coastal habitat conservation. Put through a preliminary test in Fraser’s Hill Pahang, recommendations for the application of these tools in other habitats and locations are also suggested. The primary participants in this study (the youth) have shown that they have become effective agents of change and drivers of conservation action and attitudes in Mukim Tg Kupang, as well as capable local habitat experts. The program has enabled the youth and the wider community to better cope with impending change and take the first steps towards ensuring their participation and inclusion in inclusive sustainable development.

leading you to greater heights, degree by degree 17