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An investigation of the usage of traditional material to preserve traditional Sri Lankan mural paintings

A painting can be preserved by stabilizing its behavior in its environment. Defects arise in it as a result of decay. They destabilize its behavior and increase the rate of decay. Repair of defects using inappropriate methods does not bring back stabilization but drastically change the behavior. This study investigates the repair interventions based on traditional material to decide whether they stabilize the behavior of a painting effectively and preserve it adequately.

Two categories of painting samples were produced for the investigation. Samples produced on baked brick support consisted of lime based ground, Ca(OH)2 paint-receiving layer and a mineral pigment. The second category of samples were consisted of clay ground, huntite paint-receiving layer and *Garcinia morella* pigment on rock support. They were kept in equilibrium for two months and behavior of them were determined by the quantitative measurement of moisture evaporation rate, surface moisture level and thermal movement. Destructive intervention was carried out over the stabilized samples to generate defects. The parameters of behavior were measured for one month before subjecting them for repair intervention. The fractured clay ground could be systematically intervened with clay-gum-sand mixture changing the proportion of clay:sand as appropriate. Lime:sand proportion of the consolidant could appropriately control the moisture transmission rate through the fractured lime ground. The same mixture could be used for grouting of hollow places in the ground and improve adhesion of detached and fragile layers. Interventions to the flaked paint layer and the cracks in the surface were carried out using lime water and gum water for the lime based paintings and paintings with clay grounds respectively. Interventions had to be performed with a suitable composition of mixtures to allow the relevant rates of moisture evaporation. Measurement of parameters of behavior for two months after intervention proved that they effectively returned them to the stable behavior.