

Essential Oil for Heritage Material Conservation

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The bioactivity of essential oils has long been known as antibacterial, antifungal, and insecticide. The biocide activity depends on the active compound in the oil and the biological species. There was much research on the application of essential oils as biocides developed in many fields. The idea of using essential oils for heritage came from the traditional living practices. The traditional practices for material preservation using essential oil containing natural product are found in many regions in Indonesia. In Java, vetiver (known as *akar wangi*) is put inside cloth cabinet for protecting the cloth from insect and fungi. Clove extract (combine with tobacco) is commonly used as cleaning and protecting solution for traditional wooden houses in northern part of Central Java. There are still many other examples of traditional natural product use for maintaining daily tools.

The exploration of essential oils in Indonesia as an eminent conservation material is interesting do developed. The results from research performed so far conducted in Borobudur Conservation Laboratory show a promising prospect. Clove leaf oil is scientifically proven as antifungal and termicide in wooden artefact conservation (Cahyandaru, 2010). Piper oil and citronella oil are effective for wooden artefact conservation, while the antifungal and termicide properties are also scientifically proven (Haldoko, 2014). The essential oil of Citronella (*Cymbopogon nardus*) has a positive activity against fungi, lichene, and algae on andesite stone (Riyanto et al., 2016). Other research can still be developed with a wider variety of essential oils and more varied application techniques.

Key words: Essential Oils, Akar Wangi, termites, microorganisms, lichene