

**TOKSISITAS ELEMEN METAL DALAM MORDAN AA  
(ALUMINUM ACETATE) TERHADAP PERKEMBANGAN  
EMBRIO WADER PARI (*Rasbora lateristriata* (Bleeker, 1854))**

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**INTISARI**

*Ecoprint* adalah seni pewarnaan tekstil dengan material alami yang dianggap lebih ramah lingkungan dibandingkan teknik konvensional, meski masih melibatkan bahan berbahaya seperti aluminum sulfate dan ferrous sulfate sebagai mordan. Penelitian ini bertujuan menguji toksisitas bahan-bahan tersebut, baik secara individu maupun campuran, terhadap perkembangan embrio wader pari (*Rasbora lateristriata*), sesuai protokol OECD 236. Parameter yang diuji meliputi *hatching rate*, kelulus kehidupan, detak jantung, luasan *swim bladder*, ukuran tubuh, serta perubahan morfologi pada tulang dan jantung. Hasil menunjukkan bahwa pemberian perlakuan aluminum sulfate, ferrous sulfate, dan campuran keduanya tidak memengaruhi *hatching rate* tetapi signifikan menurunkan kelulus kehidupan dan *heartbeat rate*, serta memicu kelainan tulang belakang, gangguan *craniofacial*, dan penurunan luasan *swim bladder*.

Kata kunci: *Ecoprint*, *Rasbora lateristriata*, Aluminum Sulfate, Ferrous sulfate, Uji toksisitas campuran

**TOXICITY OF METAL ELEMENTS IN ALUMINUM  
ACETATE MORDANT (AA) TO THE DEVELOPMENT OF  
YELLOW RASBORA EMBRYOS  
(*Rasbora lateristriata* (Bleeker, 1854))**

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**ABSTRACT**

Ecoprint is the art of dyeing textiles with natural materials that are considered more environmentally friendly than conventional techniques. However, it still involves harmful materials such as aluminum sulfate and ferrous sulfate as mordants. This study aims to test the toxicity of these materials, individually and in mixture, to the development of the yellow rasbora (*Rasbora lateristriata*) embryo, according to the OECD protocol 236. The parameters tested included hatching rate, survivability, heart rate, swim bladder area, body size, and morphological changes in bones and heart. The results showed that the administration of aluminum sulfate, ferrous sulfate, and a mixture of both did not affect the hatching rate but significantly reduced the survivability and heartbeat rate and triggered spinal disorders, craniofacial disorders, and decreased swim bladder area.

Keywords: Ecoprint, *Rasbora lateristriata*, Aluminum Sulfate, Ferrous sulfate, Mixture toxicity