PENGARUH KOLOID NANOPERAK TERSTABILISASI ALGINAT TERHADAP PERKEMBANGAN EMBRIO IKAN WADER PARI (*Rasbora lateristriata* Bleeker, 1854)

INTISARI

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Industrialisasi produk dengan bahan nanoperak semakin meningkat. Salah satu metode sintesis nanoperak (AgNPs) yang ramah lingkungan adalah radiosintesis menggunakan sinar gamma. Tantangan lingkungan terkait industrialisasi AgNPs tidak hanya terkait sintesis dan produksi tetapi juga terkait penggunaan produk. Peningkatan penggunaan nanoperak meyebabkan peningkatan limbah pemakaian nanoperak ke ekosistem perairan. Tujuan penelitian ini adalah untuk mempelajari pengaruh koloid nanoperak terstabilisasi alginat terhadap daya tetas telur dan struktur tulang ikan wader pari (*Rasbora lateristriata* Bleeker, 1854). Koloid AgNPs disintesis menggunakan sinar gamma pada dosis 5,10,15, dan 20 kGy kemudian dikarakterisasi dengan UV-Vis. Telur ikan didedahkan dengan koloid AgNPs selama 24 jam. Embrio diamati pada umur 2 hari menggunakan mikroskop leica. Pewarnaan tulang dilakukan dengan pewarna *Alizarin Red* dan *Alcian Blue* pada ikan berusia 5 pekan. Terdapat penurunan daya tetas embrio ikan wader pari pada perlakuan AgNPs yang disintesis pada 5 kGy. Jantung pada larva megalami edema. Bagian kranial ikan dengan perlakuan terlihat mengalami keterlambatan osifikasi jika dibandingkan dengan normal. Terdapat penurunan laju jantung pada ikan perlakuan. Pendedahan AgNPs pada fase embrio ikan wader dapat memengaruhi jantung, struktur tulang, dan daya tetas embrio ikan wader pari.

Kata kunci: AgNps, daya tetas, osifikasi, wader pari, jantung

THE EFFECT OF COLLOIDAL NANO SILVER STABILIZED BY ALGINATE ON WADER PARI FISH'S (*Rasbora lateristriata* Bleeker, 1854) EMBRYO DEVELOPMENT

ABSTRACT

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The industrialization of products with silver nanomaterials is always increasing. One of the environmentally friendly methods of nanosilver synthesis (AgNPs) is radiosynthesis using gamma rays. Environmental challenges related to the industrialization of AgNPs are related to synthesis and production and the effect of the product's utilization. Increased use of AgNps also means an increase in the use of waste products with nanosilver exposed to aquatic ecosystems. The purpose of this study was to determine the effect of alginate-stabilized colloid silver nanomaterial on the hatching ability and bone structure of wader pari (*Rasbora lateristriata* Bleeker, 1854). Colloid AgNPs were synthesized using gamma rays at doses of 5, 10, 15, and 20 kGy and then characterized by UV-Vis. Fish eggs were exposed to colloidal AgNPs for 24 hours. The embryos were observed at 2 days of age using a leica microscope. Bone staining was performed with Alizarin Red and Alcian Blue stains on 5-week-old fish. There was a decrease in the hatchability of fish embryos in the AgNPs treatment, which was synthesized at 5 kGy. Pericardial edema is observed. The ossification of the treated fish's cranial parts was seen to be delayed compared to normal. There was a decrease in heart rate in the treated embryos. Exposure to AgNPs in the wader fish embryo phase can affect the heart function, bone structure and hatchability of fish embryos.

Keyword: AgNps, hatchability, heart, ossification, wader pari