

Peningkatan Kualitas Telur Puyuh Melalui Pemberian Makroalga Laut *Eucheuma denticulatum* (N.L. Burman) Collins & Hervey dan Pemanfaatannya dalam Mempengaruhi Kondisi Fisiologis Tikus Putih *Rattus norvegicus* (Berkenhout, 1769) Saat Bunting dan Laktasi

INTISARI

Pemeriksaan kimia klinis penting bagi induk tikus saat bunting dan laktasi yang rentan anemia, pemberian telur puyuh yang diperkaya makroalga laut menjadi solusi nutrisi untuk kesehatan induk dan pertumbuhan anak. Penelitian ini bertujuan mengevaluasi pengaruh pemberian makroalga laut *Eucheuma denticulatum* terhadap kandungan kimiawi telur puyuh dan pemanfaatannya dalam mempengaruhi kondisi fisiologis tikus putih selama bunting dan laktasi. Penelitian dilaksanakan dalam dua tahap. Tahap I menganalisis kandungan nutrisi berupa proksimat berdasarkan pedoman *Association of Official Analytical Chemistry*, pengukuran zat besi, iodium, dan vitamin A menggunakan spektrofotometer, kadar kolesterol metode *Lieberman-Burchard*. Tahap II mengevaluasi parameter hematologi menggunakan *Hematology Analyzer Hemavet HV950FS*. Kadar kolesterol, *High Density Lipoprotein* (HDL) dan *Low Density Lipoprotein* (LDL) dianalisis dengan metode *Cholesterol Oxidase Para-aminophenazone* (CHOD-PAP), kadar glukosa menggunakan metode *Glucose Oxidase - Para Amino Phenazone* (GOD-PAP). Kadar *superoxide dismutase* (SOD), *malondialdehid* (MDA), dan prolaktin diukur menggunakan metode *Enzyme-Linked Immunosorbent Assay* (ELISA). Pertumbuhan anak tikus diukur melalui penimbangan bobot dan pengukuran panjang tubuh setiap hari selama masa laktasi. Produksi susu dihitung berdasarkan selisih bobot badan anak tikus sebelum dan sesudah menyusui. Analisis data dilakukan menggunakan ANOVA dan uji Duncan pada taraf signifikansi 95% dengan *Software* SPSS 25. Hasil penelitian menunjukkan penambahan *E. denticulatum* pada konsentrasi 3%, 4%, dan 5% meningkatkan kandungan vitamin A, iodin, dan zat besi telur puyuh secara signifikan, sementara konsentrasi 5% menghasilkan penurunan kadar kolesterol tertinggi. Pemberian suplemen telur puyuh yang diperkaya *E. denticulatum* terbukti meningkatkan kadar hemoglobin dan hematokrit tikus selama periode bunting secara signifikan. Suplementasi telur puyuh yang diperkaya *E. denticulatum* mampu menurunkan kadar kolesterol total, LDL, dan glukosa, serta meningkatkan kadar HDL serum, bobot, dan panjang anak tikus secara signifikan pada tikus bunting. Telur puyuh fungsional berpotensi dimanfaatkan dalam program gizi ibu hamil dan anak untuk mencegah anemia dan mendukung pertumbuhan, serta mendorong integrasi berkelanjutan antara sektor rumput laut dan peternakan puyuh.

Kata kunci: makroalga laut, kimia klinis, pengayaan telur, transfer maternal-fetal, pangan fungsional

Enhancement of Quail Egg Quality through *Eucheuma denticulatum*
(N.L. Burman) Collins & Hervey Supplementation and Its Utilization
in Influencing the Physiological Conditions of Pregnant and
Lactating Rats *Rattus norvegicus* (Berkenhout, 1769)

ABSTRACT

Clinical chemistry assessment is essential for pregnant and lactating rats, which are susceptible to anemia and metabolic disturbances. Supplementation with quail eggs enriched with marine macroalgae provide a nutritional solution to improve maternal health and offspring growth. This study evaluated the effect of marine macroalgae *Eucheuma denticulatum* on the chemical content of quail eggs and its impact on the physiological conditions of pregnant and lactating rats. The study was conducted in two stages. Stage I analyzed the nutritional content of quail eggs through proximate analysis, with iron, iodine, and vitamin A determined via spectrophotometric methods, and cholesterol measured using the Lieberman–Burchard method. Stage II evaluated hematological parameters using *Hematology Analyzer Hemavet HV950FS*. Serum cholesterol, *High-Density Lipoprotein* (HDL), and *Low-Density Lipoprotein* (LDL) levels were analyzed using *Cholesterol Oxidase Para-aminophenazone* (CHOD-PAP) method, and glucose was analyzed using *Glucose Oxidase - Para Amino Phenazone* (GOD-PAP). *Superoxide dismutase* (SOD), *malondialdehyde* (MDA), and prolactin concentrations were measured using *Enzyme-Linked Immunosorbent Assay* (ELISA) method. Offspring growth was monitored through daily body weight and length measurements, while milk production was estimated from pup weight differences before and after lactation. Data were analyzed using ANOVA followed by Duncan's test ($p < 0.05$). The results showed that *E. denticulatum* supplementation at 3%, 4%, 5% significantly increased vitamin A, iodine, and iron contents in quail eggs, while the 5% concentration produced the highest cholesterol reduction. In pregnant and lactating rats, consumption of quail eggs enriched with *E. denticulatum* significantly improved hemoglobin and hematocrit levels, reduced total cholesterol, LDL, glucose, and increased HDL concentrations. Offspring body weight and length were also significantly enhanced. These findings suggest that *E. denticulatum*-enriched quail eggs have potential for maternal and child nutrition programs aimed at preventing anemia and supporting growth, while also promoting sustainable integration between seaweed cultivation and quail farming.

Keywords: marine macroalgae, clinical chemistry, egg enrichment, transfer maternal-fetal, functional food