

**ADIPOSE TISSUE AND *INTESTINUM TENUE* HISTOMORPHOLOGY
RESPONSES OF FEMALE QUAILS (*Coturnix coturnix japonica*) BY
MAROLISTM PROBIOTIC SUPPLEMENTATION**

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Abstract

This study was conducted to investigate the effects of MarolisTM probiotic supplementation on adipose tissue and intestinal histomorphology of female quails. Twelve of 9 weeks old female quails were allotted into four groups and reared for 84 days. Supplementation of MarolisTM probiotic were given orally at dose of 0 ml/bird/day (K); 0,1 ml/bird/day (P1); 0,2 ml/bird/day (P2); and 0,3 ml/bird/day (P3). The size of adipocytes, height, width of villus, and the depth of crypt in *intestinum tenue* were observed. Data were analyzed with OneWay ANOVA and continued with Tukey Test. The results showed that MarolisTM probiotic treatment have an affect on the adipocytes size, duodenum's villus' height and crypt's depth, crypt's depth in jejunum, as well as ileum's villus width and crypt depth ($P < 0,05$). Adipocytes size were $389,2 \mu\text{m}^2$; $258,1 \mu\text{m}^2$; $253,8 \mu\text{m}^2$; $245,4 \mu\text{m}^2$ for K, P1, P2, and P3 repectively. P2 (110,5 μm) and P3 (110,1 μm) in the duodenum had significantly different villus heights than the other treatment groups. P1 (93.88 μm) in the jejunum had significantly different villus heights than group K (66.87 μm). The height of villus in the ileum were not significantly different from each other ($P > 0,05$). The width of villus in duodenum and jejunum of all groups were not significantly different ($P > 0,05$). The widest ileum villus was found in P3 (20,2 μm). The crypt's depth in duodenum and ileum of P3 were 22,2 μm and 20,9 μm respectively. These were significantly different from other groups. For jejunum's crypt depth, P2 (18,8 μm) and P3 (19,2 μm) were significantly higher than other groups. This study indicated that supplementation of 0,2 ml/bird/day (P2) and 0,3 ml/bird/day (P3) of MarolisTM probiotic showed the optimum result to lower the size of adipocytes and improve the histological structure of *intestinum tenue*.

Keywords: Adipose, Histomorphology, *Intestinum tenue*, MarolisTM probiotic, Quails.

**RESPONS HISTOMORFOLOGIS JARINGAN ADIPOSA DAN INTESTINUM
TENUE PUYUH (*Coturnix coturnix japonica*) BETINA DENGAN
SUPLEMENTASI PROBIOTIK MAROLISTM**

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh suplementasi Probiotik MarolisTM terhadap histomorfologis jaringan adiposa dan *intestinum tenue* pada puyuh betina. Sebanyak 12 ekor puyuh betina dewasa (usia 9 minggu) dibagi secara acak dalam empat kelompok perlakuan dan dipelihara selama 84 hari. Probiotik MarolisTM diberikan dengan cara dilarutkan dalam air minum dengan konsentrasi: 0 ml/ekor/hari (K); 0,1 ml/ekor/hari (P1); 0,2 ml/ekor/hari (P2); dan 0,3 ml/ekor/hari (P3). Penelitian menggunakan *Completely Randomized Design* (CRD) faktor tunggal, data diuji ANOVA dan dilanjutkan dengan uji beda rerata Tukey. Hasil penelitian menunjukkan bahwa Probiotik MarolisTM berpengaruh terhadap histomorfologis jaringan adiposa, tinggi vili dan kedalaman kript a *duodenum*, kedalaman kript a *jejunum*, lebar vili dan kedalaman kript a *ileum* puyuh betina ($P < 0,05$). Luas sel adiposa berturut-turut adalah $389,2 \mu\text{m}^2$; $258,1 \mu\text{m}^2$; $253,8 \mu\text{m}^2$; dan $245,4 \mu\text{m}^2$ untuk K, P1, P2, dan P3. Tinggi vili *duodenum* P2 ($110,5 \mu\text{m}$) dan P3 ($110,1 \mu\text{m}$) berbeda nyata dibandingkan kelompok perlakuan lainnya. Tinggi vili *jejunum* pada P1 ($93,88 \mu\text{m}$) berbeda nyata dibanding dengan K ($66,87 \mu\text{m}$). Sedangkan, tinggi vili pada *ileum* tidak berbeda nyata, demikian pula untuk lebar vili *duodenum* dan *jejunum* semua kelompok perlakuan ($P > 0,05$). Vili *ileum* paling lebar terdapat di kelompok perlakuan P3 ($20,2 \mu\text{m}$). Kedalaman kript a *duodenum* dan *ileum* berbeda nyata pada kelompok perlakuan P3 ($22,2 \mu\text{m}$ dan $20,9 \mu\text{m}$). Kedalaman kript a *jejunum* pada kelompok perlakuan P2 ($18,8 \mu\text{m}$) dan P3 ($19,2 \mu\text{m}$) berbeda nyata dari kelompok perlakuan lainnya. Penelitian ini menunjukkan bahwa suplementasi Probiotik MarolisTM 0,2 ml/ekor/hari dan 0,3 ml/ekor/hari menurunkan luas sel adiposa dan memperbaiki kondisi histomorfologis *intestinum tenue*.

Kata kunci: Adiposa, Histomorfologis, *Intestinum tenue*, Probiotik MarolisTM, Puyuh.