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The effect of the dietary free fatty acids and its saturation degree on the morphometry of intestinal mucosa in 14-days-old broiler chickens

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Objective

The objective of the present experiment is to study the influence of the two levels of **free fatty acids** (FFA) and the **degree of saturation** of the dietary fat supplemented on the integrity of the intestinal mucosa in 14-days-old broiler chickens.

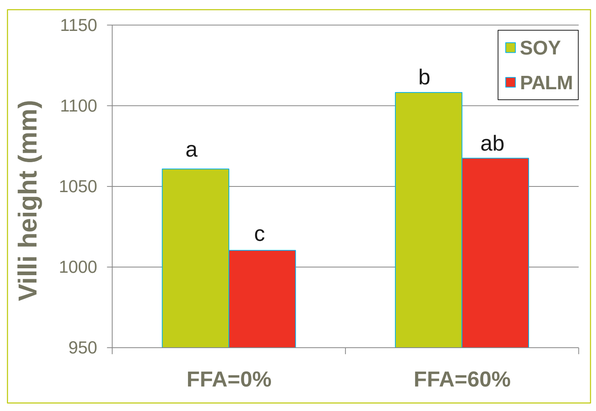
Materials and methods

Factorial design 2x2

Animals		2 Fat sources added :	2 Levels of Free Fatty Acids (FFA):
n = 240 Female Broiler Ross 308	6 replicates/treatment 10 chickens/replicate	Saturated, **Palm** Unsaturated, **Soy**	FFA = 0% FFA = 60%

Samples	Tissue samples for histology	Measurements
1 chicken/replicate Proximal portion of the jejunum Slaughtered at 14 days of age	3 sections of jejunum/chicken	Height of villi (Fig.1) Depth of crypts of Lieberkühn (Fig.2)

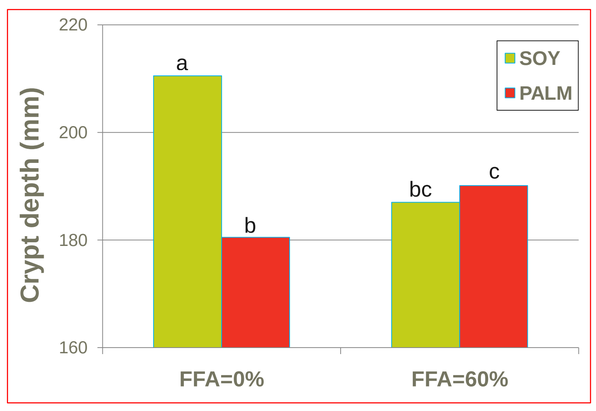
Results and discussion



The intestinal villi were longer in those chickens fed unsaturated fat versus those fed the saturated one ($p<0.01$).

The length of the jejunal villi was greater with high FFA dietary level ($p<0.01$).

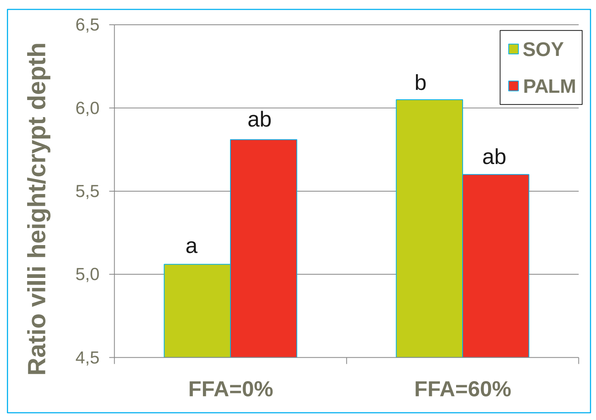
No interaction was found between the FFA level and the saturation degree in villi length.



A strong interaction was found between the FFA level and the degree of saturation in the crypts depth ($p<0.01$).

The depth of the crypts in those animals fed with soy was lower with the higher FFA level ($p<0.01$), while in animals fed with palm it was greater with the higher FFA level ($p<0.01$).

Also, with a low FFA level (0%), broiler chickens fed the soy diet presented deeper crypts than animals fed the palm diet ($p<0.01$), however, no differences were found with the high FFA level (60%).



The ratio villi height/crypt depth in animals fed with soy diet was greater with the higher FFA level, while it remained similar in those animals fed with palm diet.


(Fig.1)


(Fig. 2)

Conclusion

The morphometry of the intestinal mucosa is influenced by the dietary FFA and its saturation degree in broiler chicken starter diets.

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