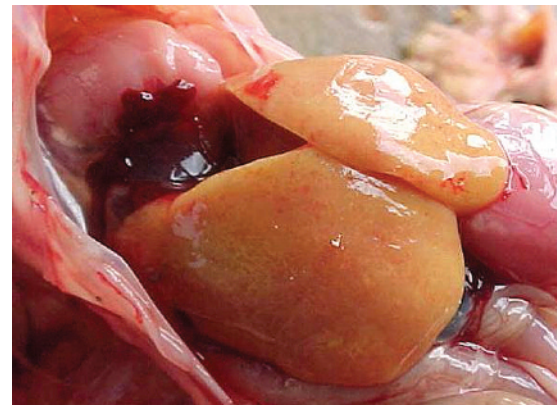


A practical guide to differential diagnosis



3 – Fatty liver

by **Inês Rodrigues**, technical manager, **Biomin Singapore Pte Ltd**, and **Luca Vandi and Simone Schaumberger**, technical managers, **Biomin Holding GmbH**.

Fatty liver syndrome is a non-infectious condition that affects laying or breeding hens, especially caged animals. Some strains appear to be more susceptible than others, higher producing hens are the most susceptible within a flock and outbreaks of the problem are often associated with hot weather and a period of extensive egg laying.

Afflicted animals present general obesity (on the average 20% overweight) with enlarged, fat-infiltrated livers, which are soft and easily damaged. Variable low mortality (2-5%) may be observed, caused by internal liver haemorrhage. In that case, birds will be found suddenly dead with pale head skin.

Usually, the cause is related with high calorie intake (high energy diets or incorrect energy:protein ratios) but other factors, such as intake of the hepatotoxin aflatoxin or mismanagement of layer birds must not be disregarded.

In case exposure to mycotoxins is to blame, commonly known as lean bird fatty liver, livers are yellowish with petechial haemorrhages but not swollen; microscopic lesions of centrilobular necrosis and bile duct hyperplasia are present, but no excessive abdominal fat is found.

Depending on the potential cause for fatty liver, different corrective actions are proposed (please consult table on the right).

In terms of mycotoxins, prevention can be undertaken through the use of a proper mycotoxin risk management tool which adsorbs and/or biotransforms mycotoxins, thus eliminating their toxic effects for the animals, while guaranteeing liver and immune protection. The Mycofix product line from Biomin combines the three strategies – adsorption, biotransformation and bioprotection – which work together to prevent the hazardous effects of mycotoxins in poultry flocks. ■

References are available from the authors upon request

Check list	Corrective action
Potential cause: NUTRITION: Energy/protein ratio	
<ul style="list-style-type: none"> • Carbohydrate level in diet. • Energy/protein ratio in diet. 	<ul style="list-style-type: none"> • Avoid high carbohydrate diets, especially in summer. • Adopt proper energy/protein ratio. • Apply AA to drinking water.
Potential cause: NUTRITION: Rancid fats	
<ul style="list-style-type: none"> • Quality of fats in term of: peroxide value, rancidity and free fatty acids. 	<ul style="list-style-type: none"> • Avoid low quality fats. • Replace animal fats with vegetable fats. • Apply choline chloride + vitamin B to feed or water.
Potential cause: MYCOTOXINS: Aflatoxins (Afla)	
<ul style="list-style-type: none"> • Positive for Afla in raw materials (ELISA) or feed (HPLC). • Raw materials originating from supplier/region with history of aflatoxin contamination. • Histopathology: Check other target organs of Afla (ex. liver). • Decline in overall flock performance. 	<ul style="list-style-type: none"> • Check average contamination levels. • Use Mycofix at the correct dosage level. • Avoid contamination of feed bins or feed/water lines by stale, wet or mouldy feed.
Potential cause: MANAGEMENT: Hormone status	
<ul style="list-style-type: none"> • Management of laying birds (excessive oestrogen stimulation). 	<ul style="list-style-type: none"> • Improve management of laying birds. • Correct lighting program.
Potential cause: PATHOGENS: Viral hepatitis (IBH - Inclusion Body Hepatitis)	
<ul style="list-style-type: none"> • Clinical symptoms include immunosuppression, diarrhoea, anorexia, depression, ruffled feathers which appear only several hours prior to death. • Necropsy: Macroscopic lesion in the enlarged, dystrophic liver with yellowish colour and crumbly texture. Enlarged kidneys. • Serology: Isolation of serotype I, II or III from lesions. 	<ul style="list-style-type: none"> • Use inactivated vaccines (existing only for Group I). • Check breeding stock and eliminate affected birds.
Note: Pathogens were excluded from the table due to space constraints but may be important to consider.	