

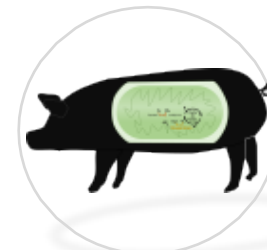
➤ Effects of pelleting and botanical source on starch utilization in growing pigs

Anastasia Agouros^{1,2}, Maud Le Gall², Katia Quémeneur², Yannick Lechevestrier², Lucile Montagne¹, Nathalie Quiniou³ and Etienne Labussiere¹

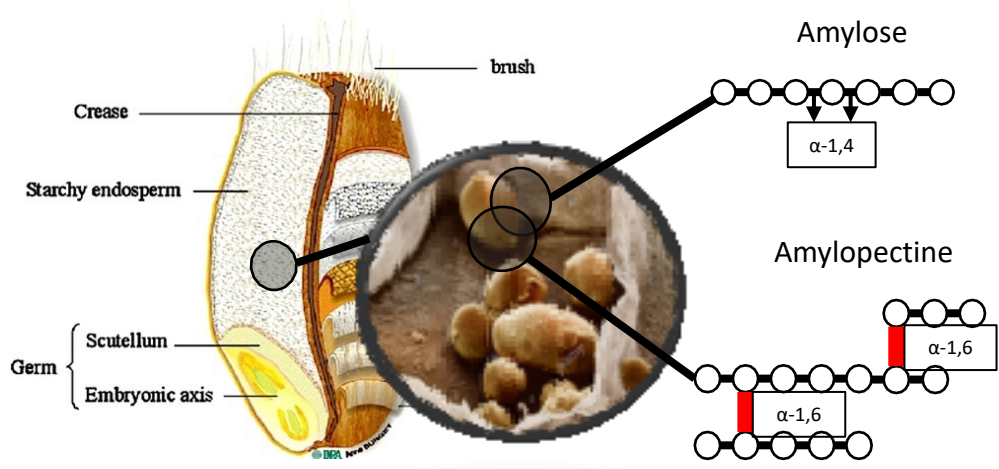
¹PEGASE, INRAE, INSTITUT AGRO Rennes, 35590 Saint-Gilles, France

²Provimi France, Cargill, 35320 Crevin, France,

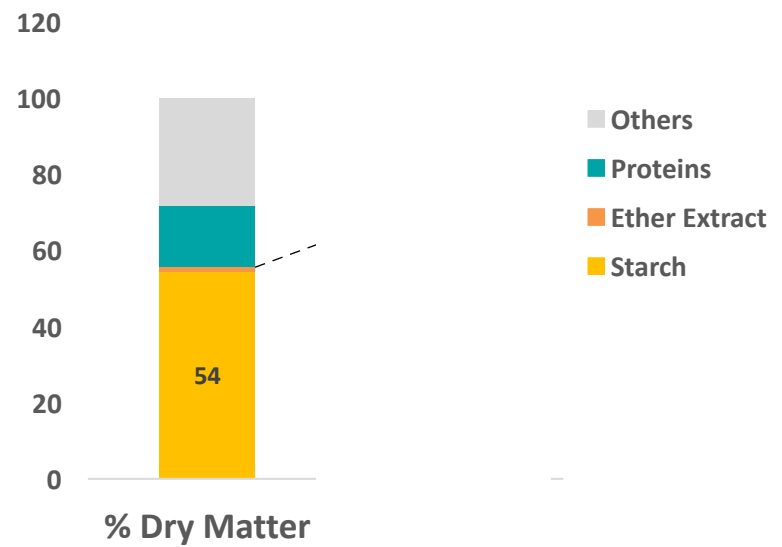
³IFIP-Institut du Porc, La Motte au Vicomte, 35650 Le Rheu, France.



➤ Context: Pelleting improves dry matter digestibility and metabolic utilization of energy

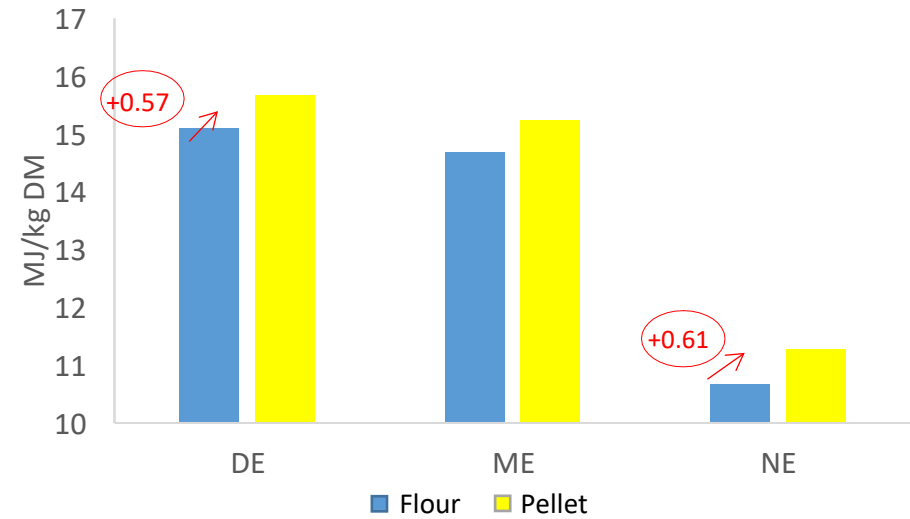


Starch contributes to 70 % of the net energy supply



The ratio is susceptible to impact the digestion

Pelleting improves net energy values not only because improved digestibility but due to better digestive and metabolic utilizations



Labussière *et al.* 2015



INRAE

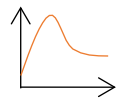
Pelleting and botanical source influence starch utilization in growing pigs
28/08/2023 / EAAP2023 / session 08 "Various topics in pig production" / Agouros

➤ Objectives of the study: Testing the effect of pelleting and botanical source on pig digestion and metabolism

Material and methods

Experimental design

- ❖ 6 experimental diets :
 - wheat **W** vs maize **M** vs barley **B** based diets
 - Distributed in 2 different presentation forms flour **F** vs pelleted **P**
- ❖ Feeding management:
 - 2220 ± 50 g DMI
 - 4 feed distributions per day (every 6 hours with free access)
- ❖ Over one week:
 - Measurement of fecal digestibility
 - Continuous measurements of respiration gas exchanges
 - Blood kinetics before and after a test meal
 - A supplementary fasting day to partition total heat (calculation of thermic effect of feeding)
- ❖ During the week after:
 - Digestive transit rate at slaughter after meals containing indigestible markers of liquid and solid phases

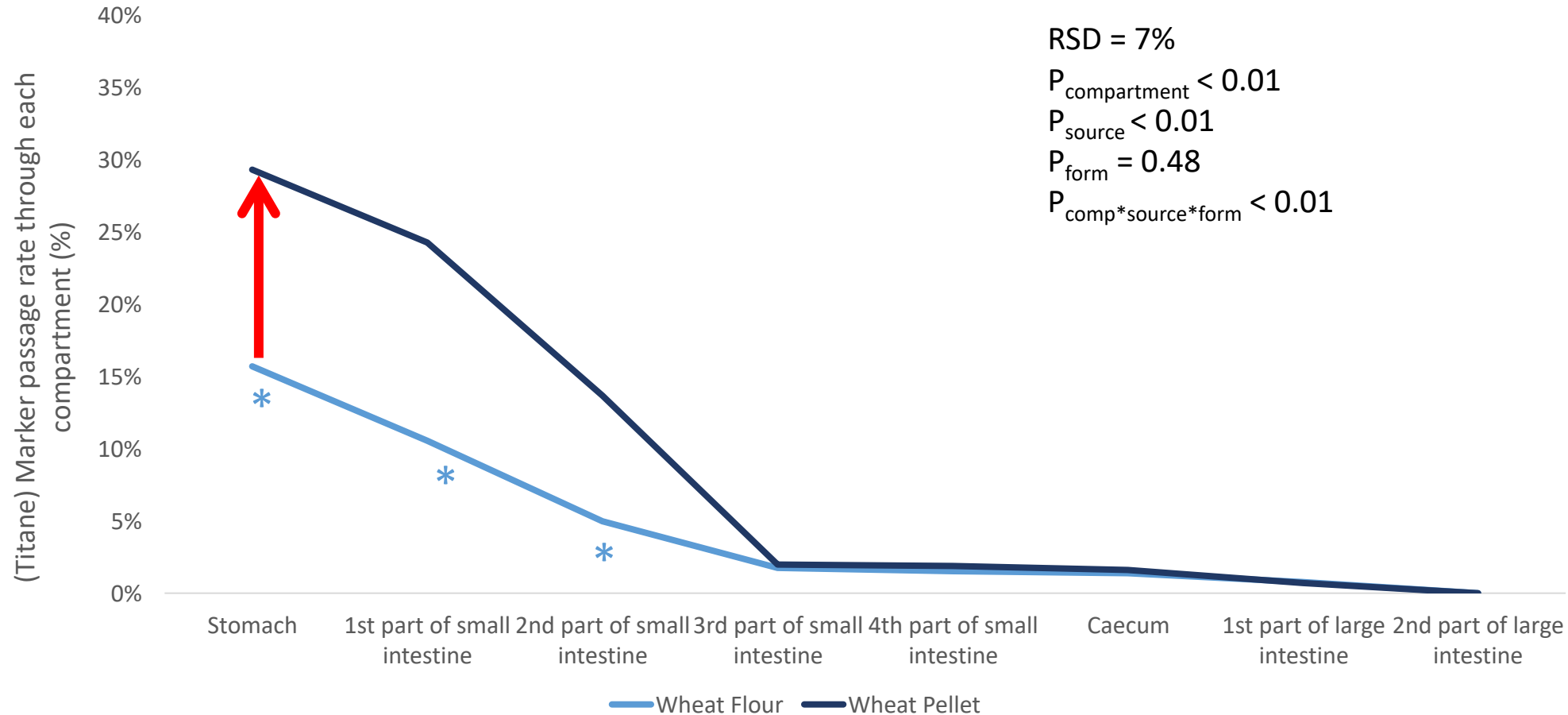


Animals

- ❖ 72 pigs (12 pigs housed in pairs / treatment)
- ❖ 52 kg BW
- ❖ **Catheterized pigs :**
2 catheters in portal and jugular veins

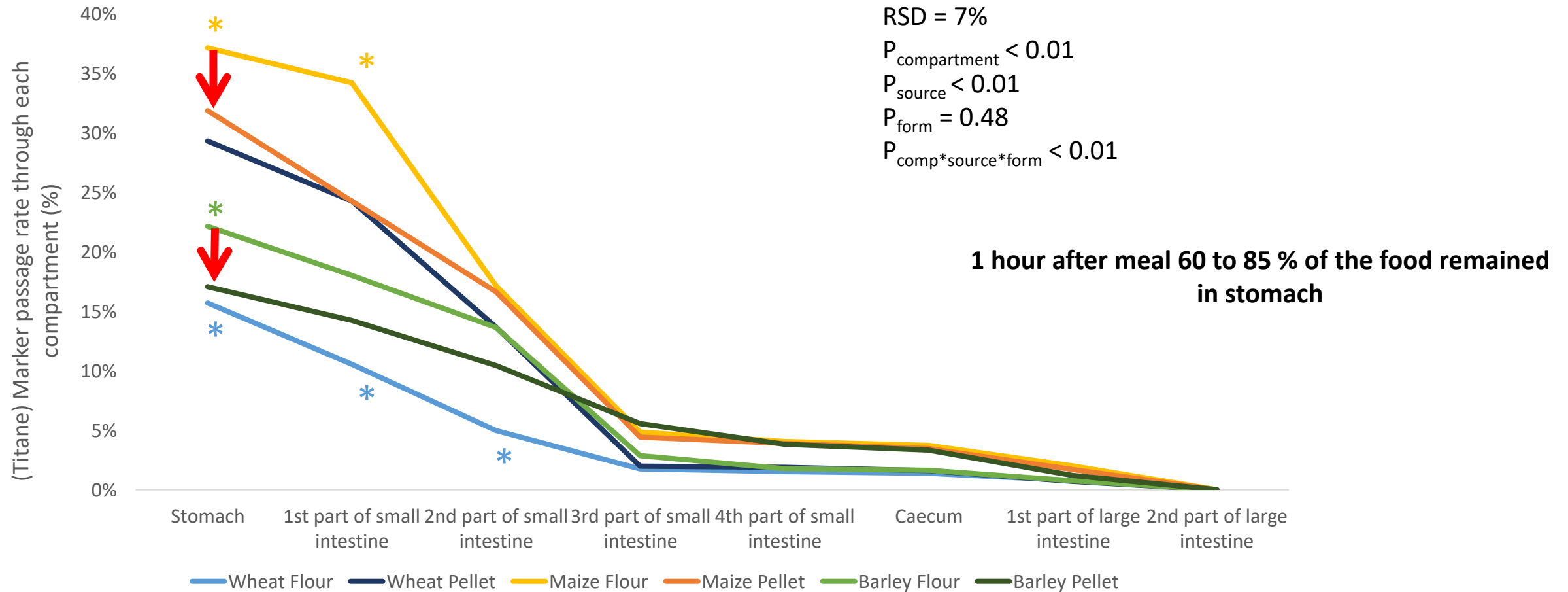


➤ Pelleting accelerates the transit kinetics of the solid phase of the wheat flour based diets 1 H after feeding in upper gastro intestinal tract



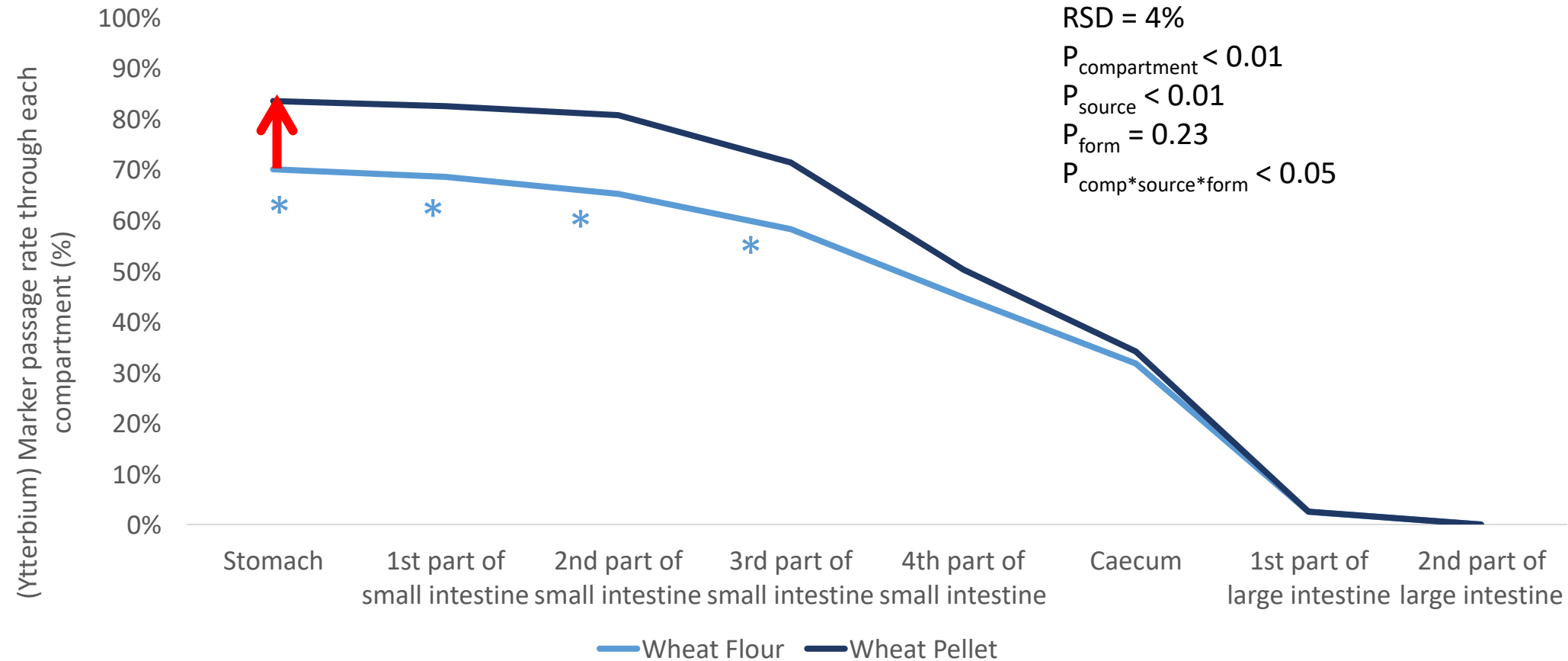
- Pelleting increased wheat-based diet transit kinetics

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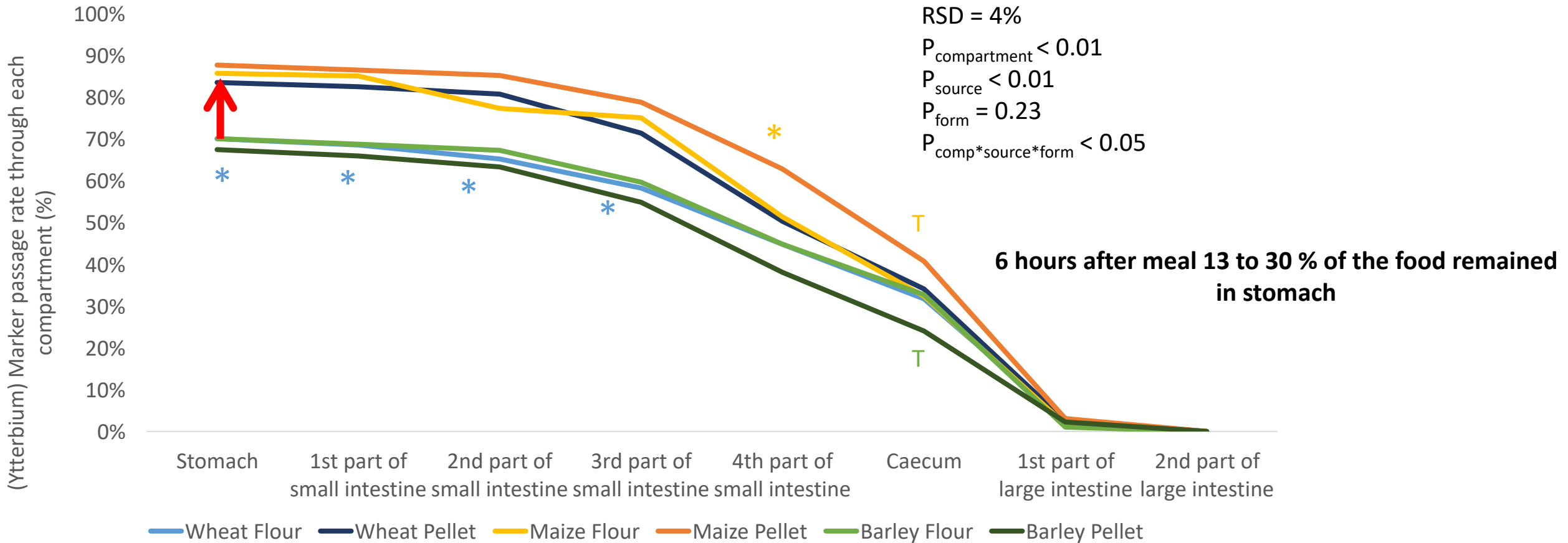


- Pelleting increased wheat-based diet transit kinetics

➤ Pelleting modifies the transit kinetics of the solid phase 6 H after feeding in stomach and small intestine



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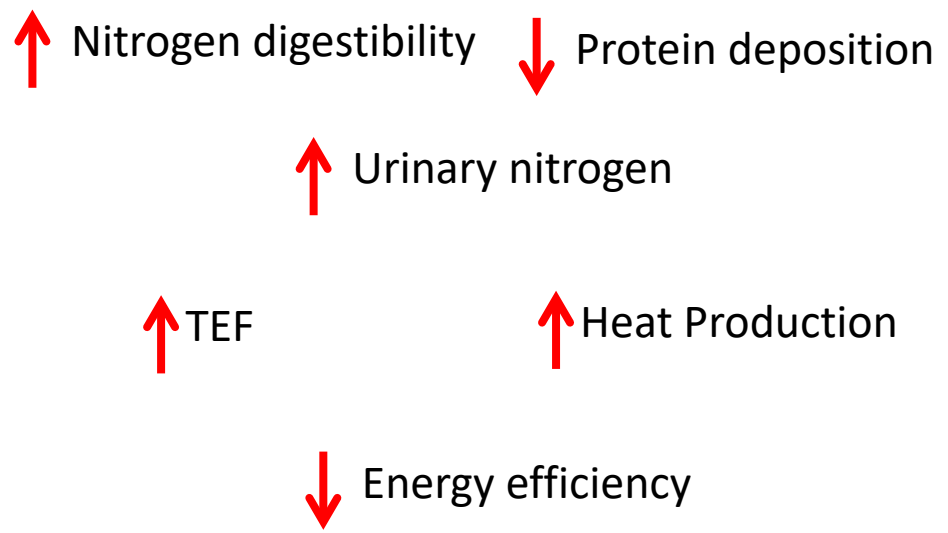
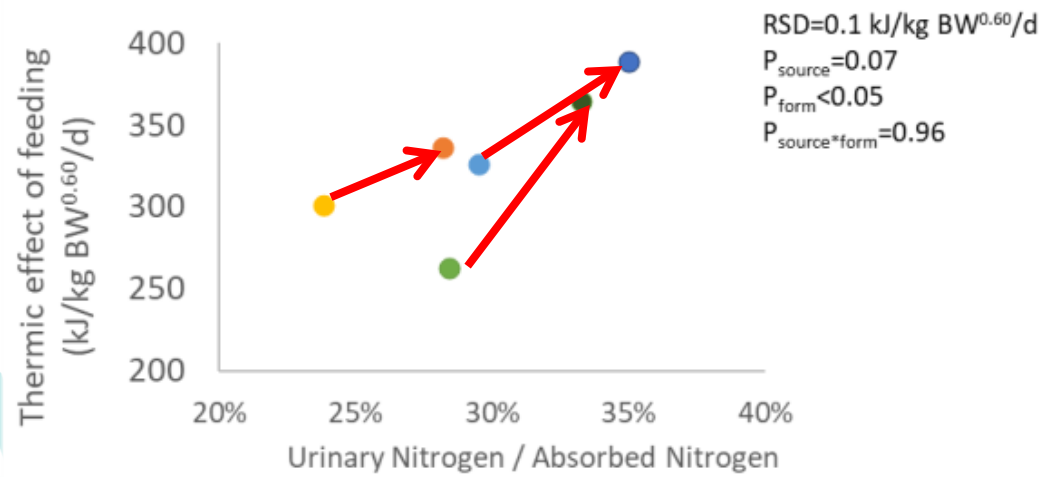
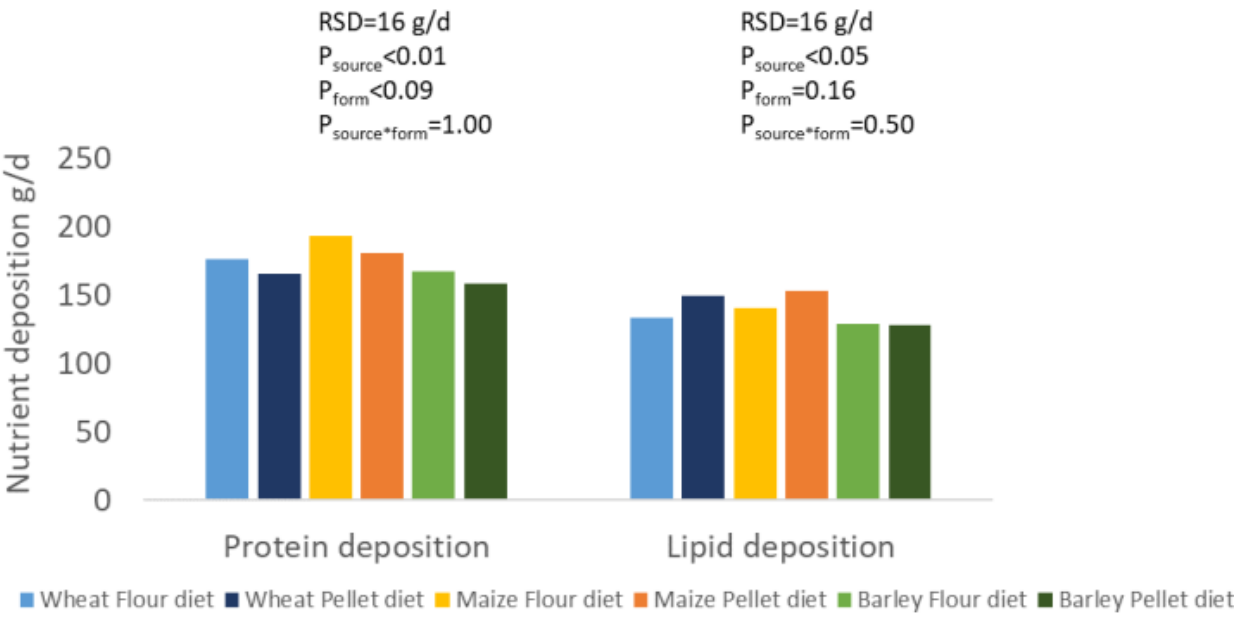
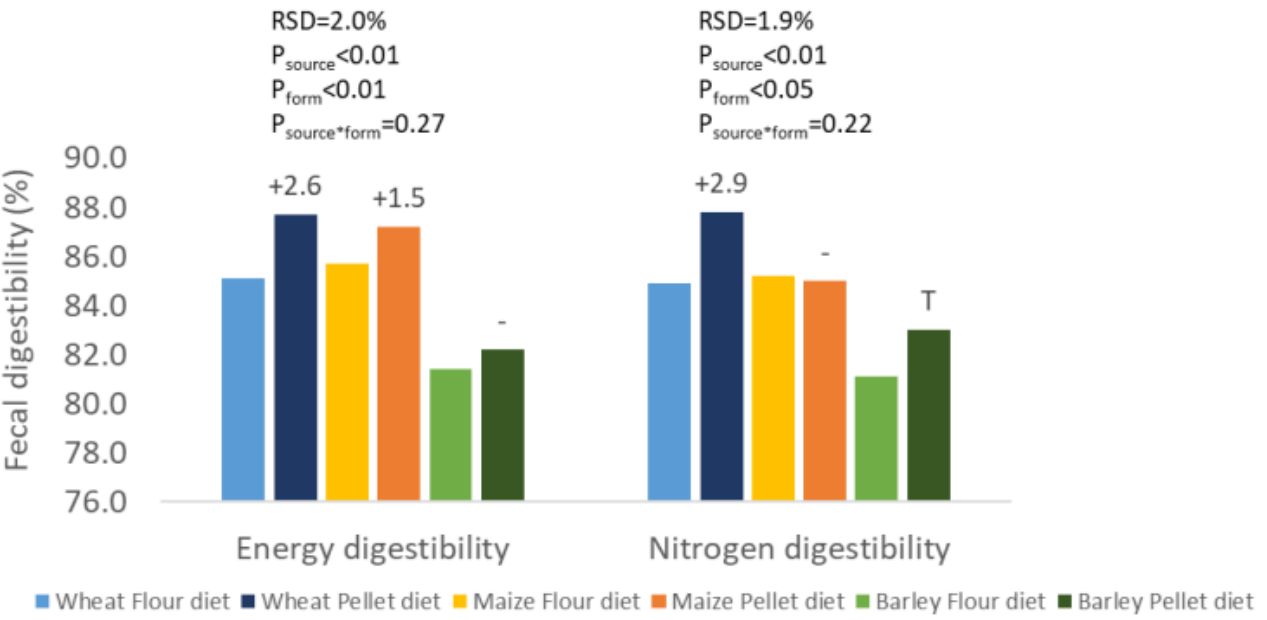


- Gastric retention clearly shows two profiles among diets

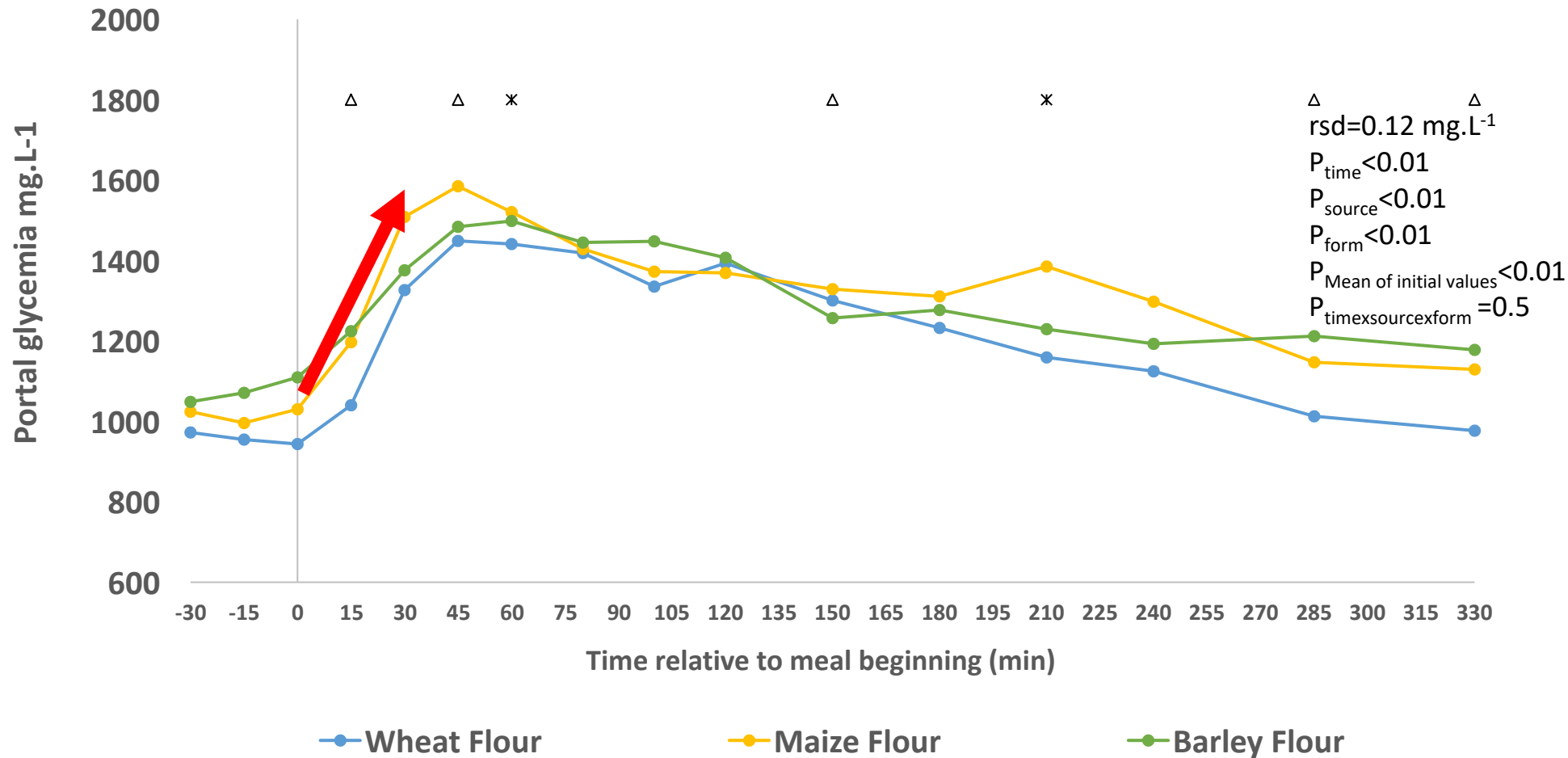
T P-Value < 0.10

* P-Value < 0.05

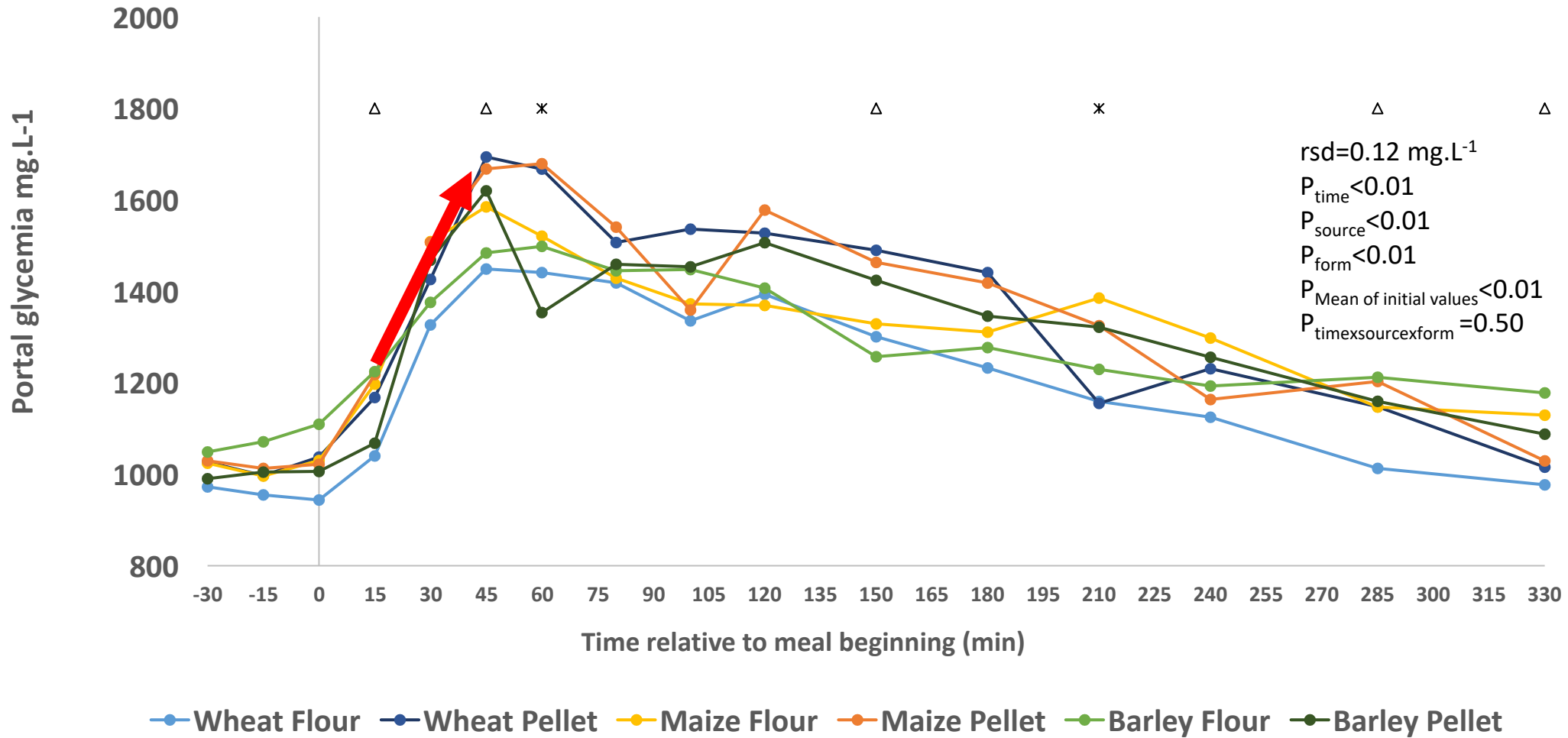
➤ Pelleting increases energy digestibility but may lead to metabolic inefficiencies



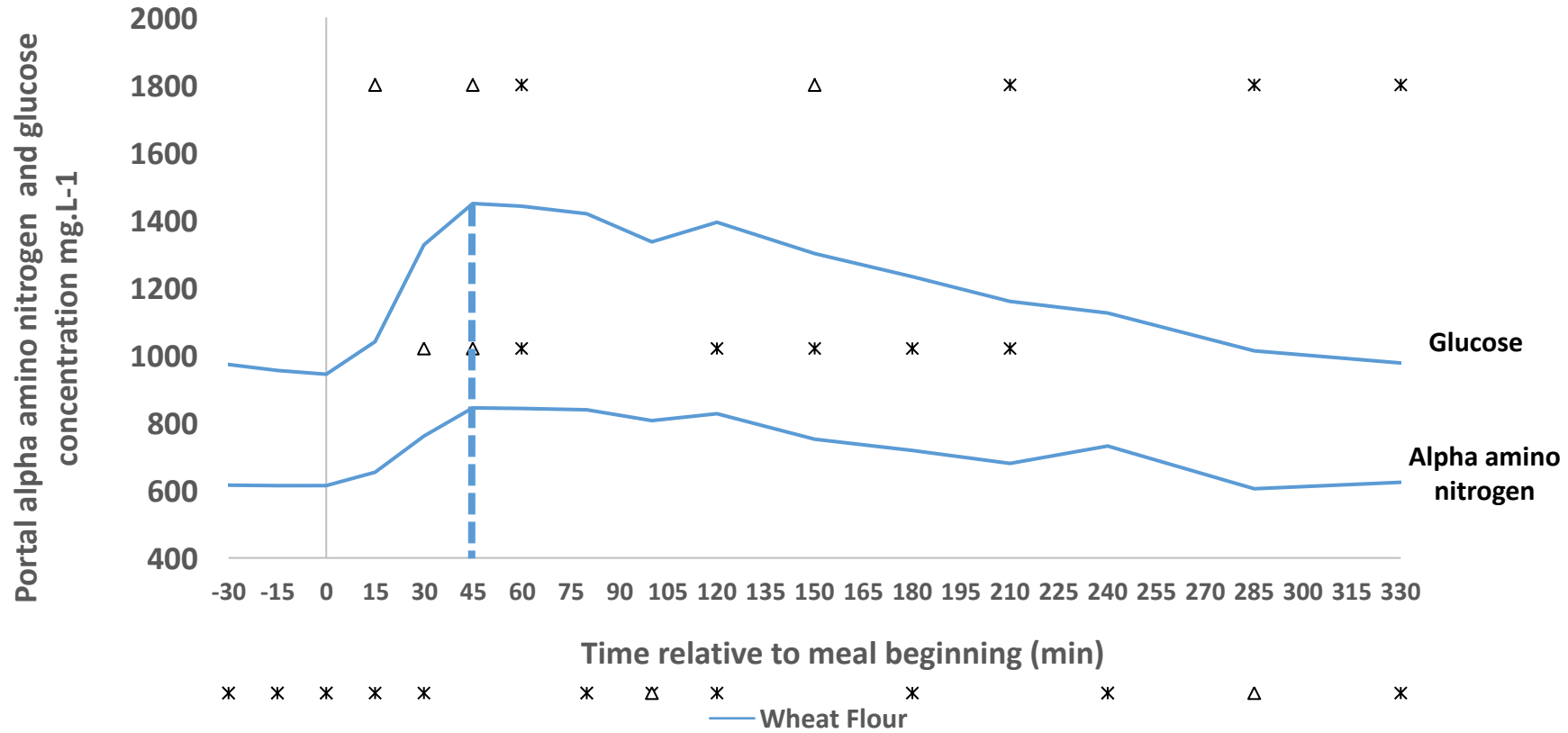
➤ Pelleting cereal-based diets increases portal glucose appearance kinetics after a meal



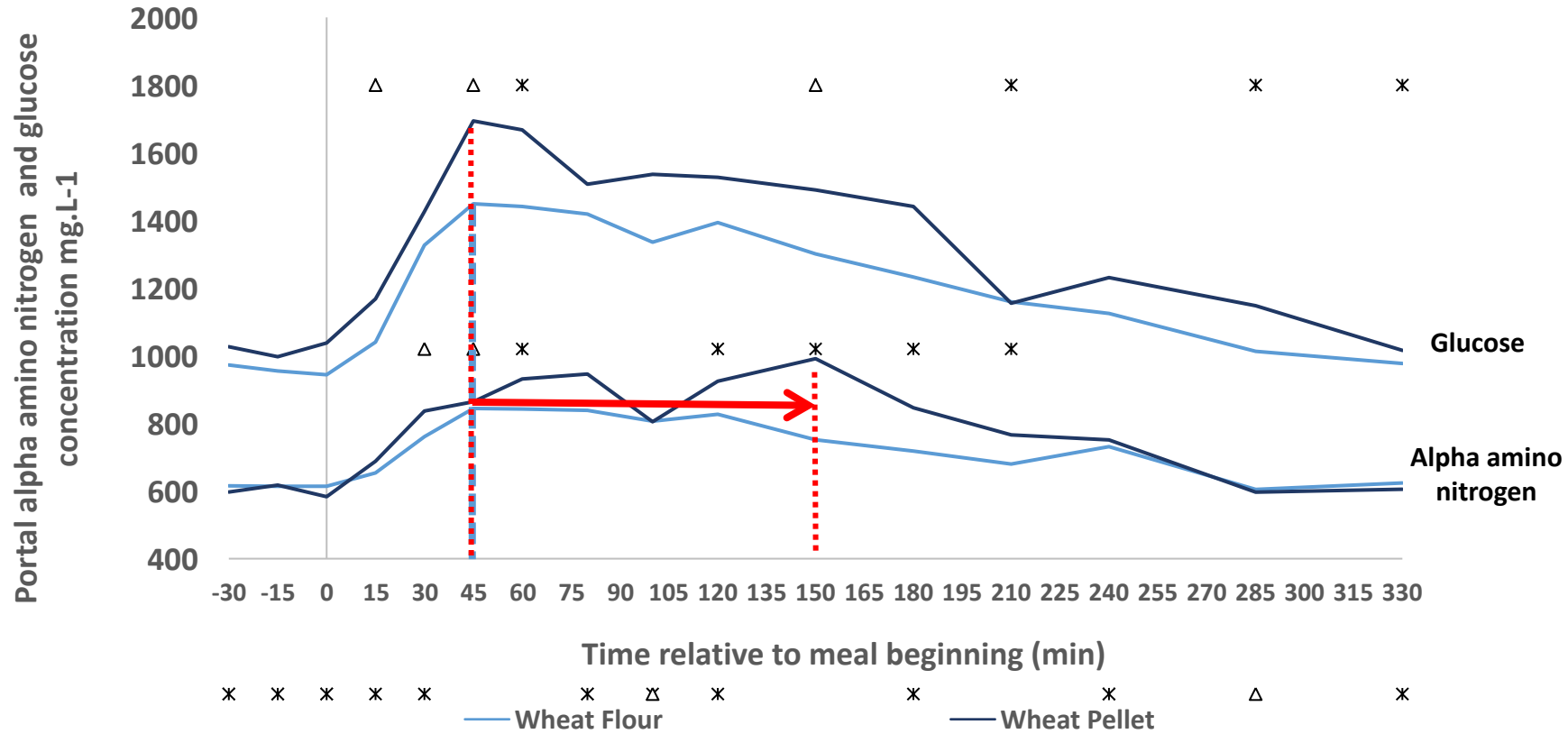
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➤ Pelleting cereal-based diets increases portal glucose appearance kinetics after a meal leading to an asynchronicity of nutrient utilization



➤ Conclusions and perspectives

- Pelleting influences differently the transit kinetics among botanical sources
- Pelleting cereal-based diets accelerates the portal glucose appearance
- Pelleting increases energy digestibility
- Consequences of pelleting at metabolic level are more complex to define :
take care at asynchronous supply of carbohydrates and amino acids





Thank you for your attention



Any Questions ? ? ?

➤ Effect of pelleting and botanical source on starch utilization in growing pigs

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