Session 19, Theatre Presentation 3*

Effects of non starch polysaccharides (NSP) in worm-infected chicks

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*Presented at the 59th "Annual Meeting of the European Association for Animal Production", 24-27 August 2008, Vilnius, Lithuania (Book of Abstracts No: 14:152.)

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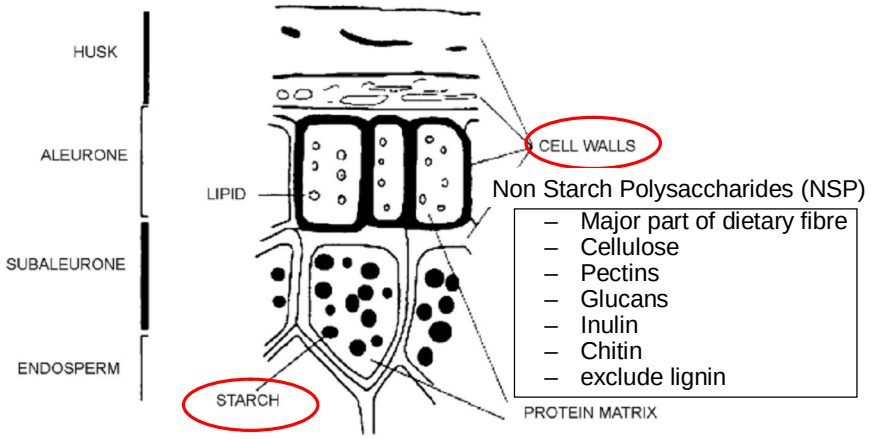
Introduction

Dietary carbohydrates and parasites

- Dietary carbohydrates influence pig nematodes (Petkevičius et al., 1997; 2001; 2003)
  - *Trichuris suis*
  - *Oesophagostomum dentatum*

Plant polysaccharides



Non Starch Polysaccharides (NSP)

- Major part of dietary fibre
- Cellulose
- Pectins
- Glucans
- Inulin
- Chitin
- exclude lignin

Ins.-NSP: CHOs, less fermentable
Sol.-NSP: CHOs, easily fermentable

Basic features of *H. gallinarum*

Prevalence*	29-75%
Size, cm	0.7-1.5
Life cycle	direct
Predilection site	caeca
Lifespan	1 year
Feed on	digesta

Vector for *Histomonas meleagridis*

(*): Permin et al., 1999; Abdelqader et al., 2008; Kurt and Acici, 2008

The objective

- **Does the type of NSP (insoluble or soluble) affect infection with *H. gallinarum*?**

Material and methods

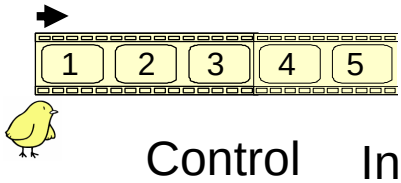
The diets

Control	Basal mixture (100 kg)
Insoluble NSP	Basal mixture (100 kg) + 10 kg Pea bran
Soluble NSP	Basal mixture (100 kg) + 10 kg Chicory root

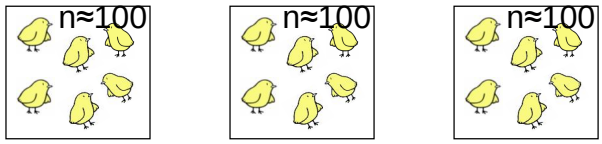
NSP content of the diets

	Diets		
(g/kg DM)	Control	Ins-NSP (Pea bran +)	Sol-NSP (Chicory root +)
Ins- NSP	108	165	116
Sol- NSP	30	32	81

Exp-1 (100 eggs & at 5th W)



Control Ins-NSP Sol-NSP



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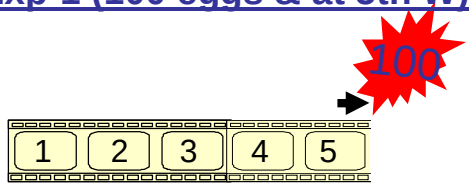
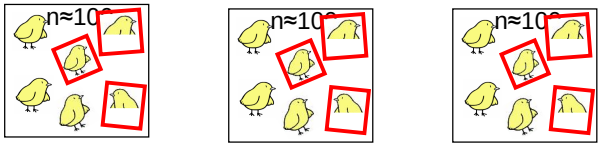
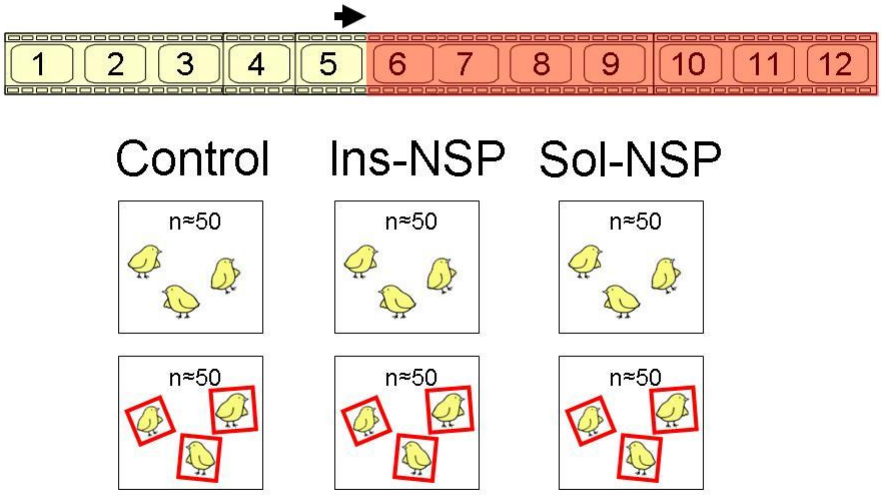


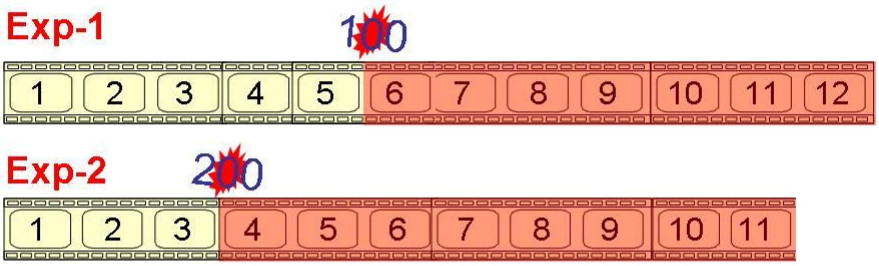
Control Ins-NSP Sol-NSP



Exp-1 (100 eggs & at 5th W)

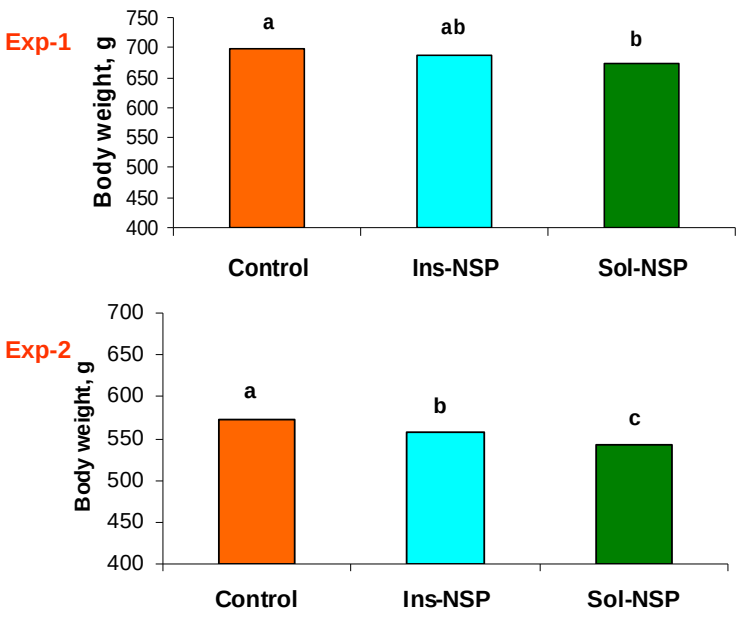


Exp-1 vs Exp-2



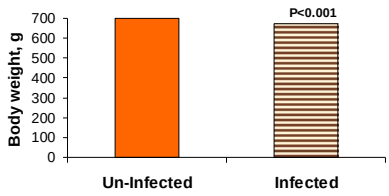
Results

Diet ==>Body weight

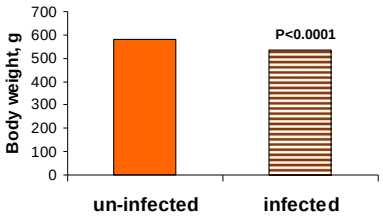


Infection ==>Body weight

Exp-1

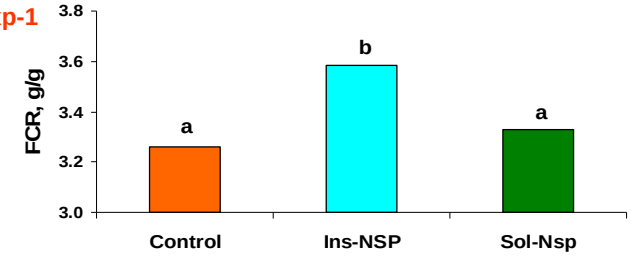


Exp-2

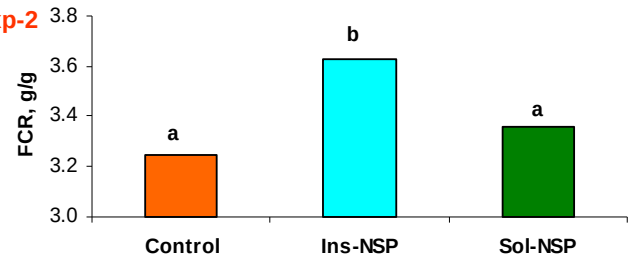


Feed groups ==>Feed conversion rate

Exp-1

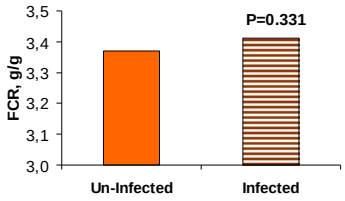


Exp-2

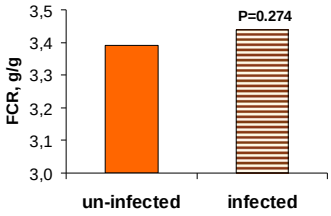


Infection groups ==> feed conversion rate

Exp-1

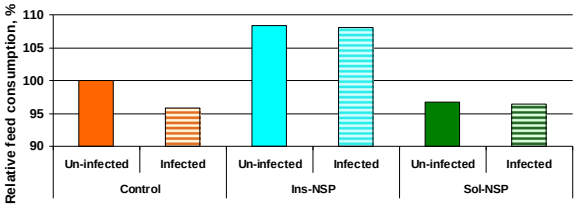


Exp-2

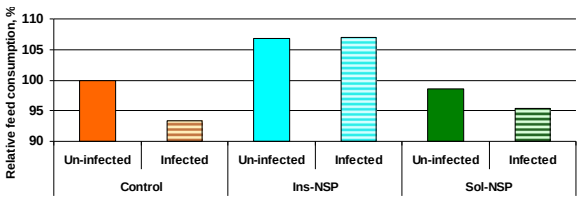


Relative feed consumption

Exp-1



Exp-2



Worm parameters

Infection rate*, %

	Control	Ins.NSP	Sol.NSP	P
Exp-1/100 (n=149)	22.00	28.57	18.37	NS
Exp-2/200 (n=96)	51.61 ab	74.29 b	30.00 a	0.0017

(*):Analyzed with the Chi-Square test

Exp-1

Worm parameters*

	Control	Ins.NSP	Sol.NSP	P
Total burden	0.76±2.11	4.57±20.20	0.97±4.76	**NS**

(*):Analyzed with the Kruskall-Wallis test

Exp-2

Worm parameters*

	Control	Ins.NSP	Sol.NSP	P
Establ. rate, %	3.42±7.41a	6.39±10.99 b	0.68±1.48 a	0.001
No.of fem.	3.55±7.94 a	5.57±9.70 a	0.67±1.65 b	0.005
No. of male	3.19±7.02 a	7.09±12.50 b	0.70±1.47 a	0.004
Total burden	6.84±14.83 a	12.77±21.97 b	1.37±2.95 a	0.001
Female Length, mm	9.54±1.68 a	10.05±1.03 a	8.70±0.45 b	0.023

(*):Analyzed with the Kruskall-Wallis test

Conclusion

- Effects of diets were shown at higher infection doses

➔ Ins- NSP diet enhances worm burden

➔ Sol-NSP diet decreases worm burden

Thank you for your attention