

Fatores antinutricionais do farelo de soja e seus efeitos para a produção

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Tópicos de discussão

- Considerações gerais
- Fatores proteicos
- Carboidratos
- Considerações finais



Considerações gerais





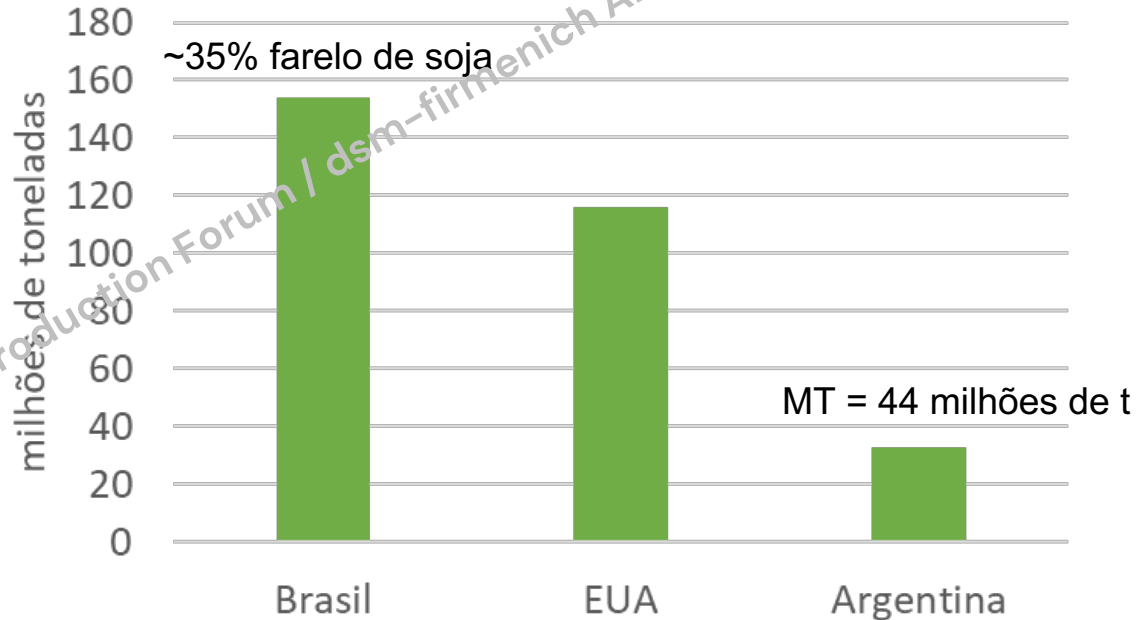
Farelo de soja
20-35%

Milho

Soja (*Glycine max*)



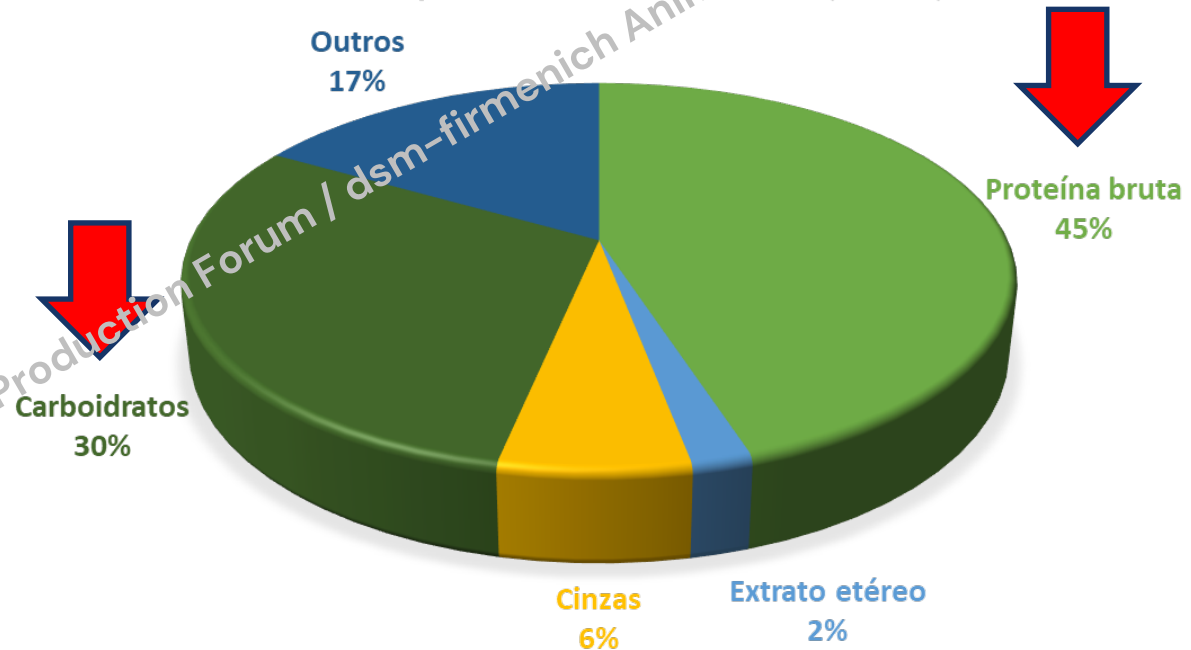
Maiores produtores mundiais de soja
2022/2023



Soja (*Glycine max*)



COMPOSIÇÃO DO FARELO DE SOJA (% MN)

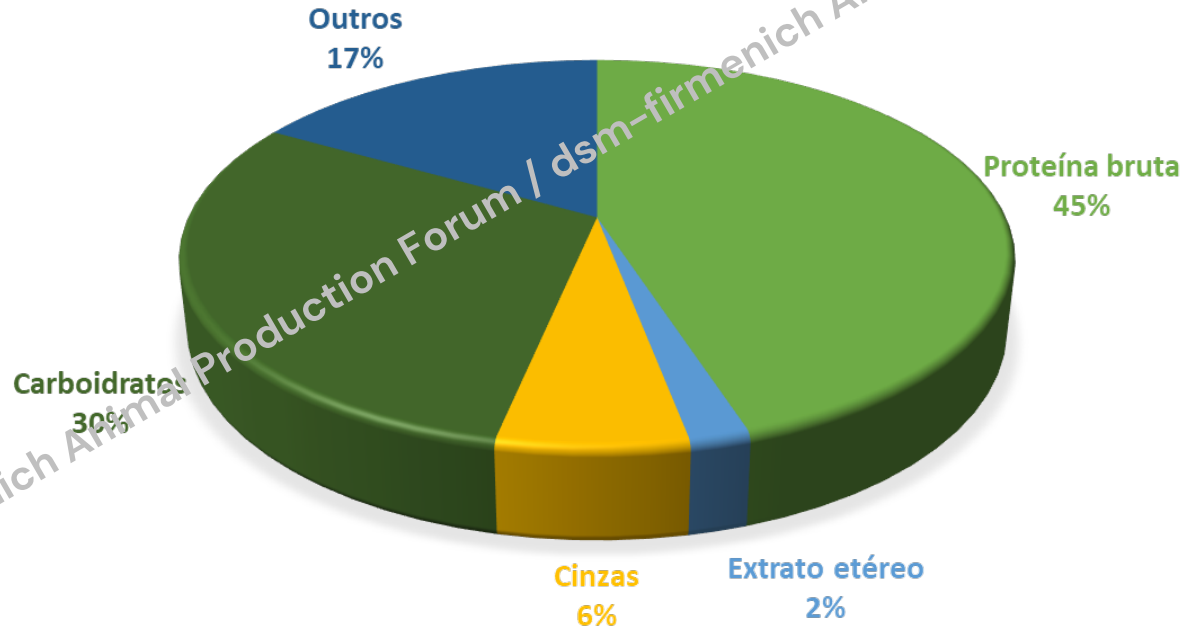


Fatores proteicos

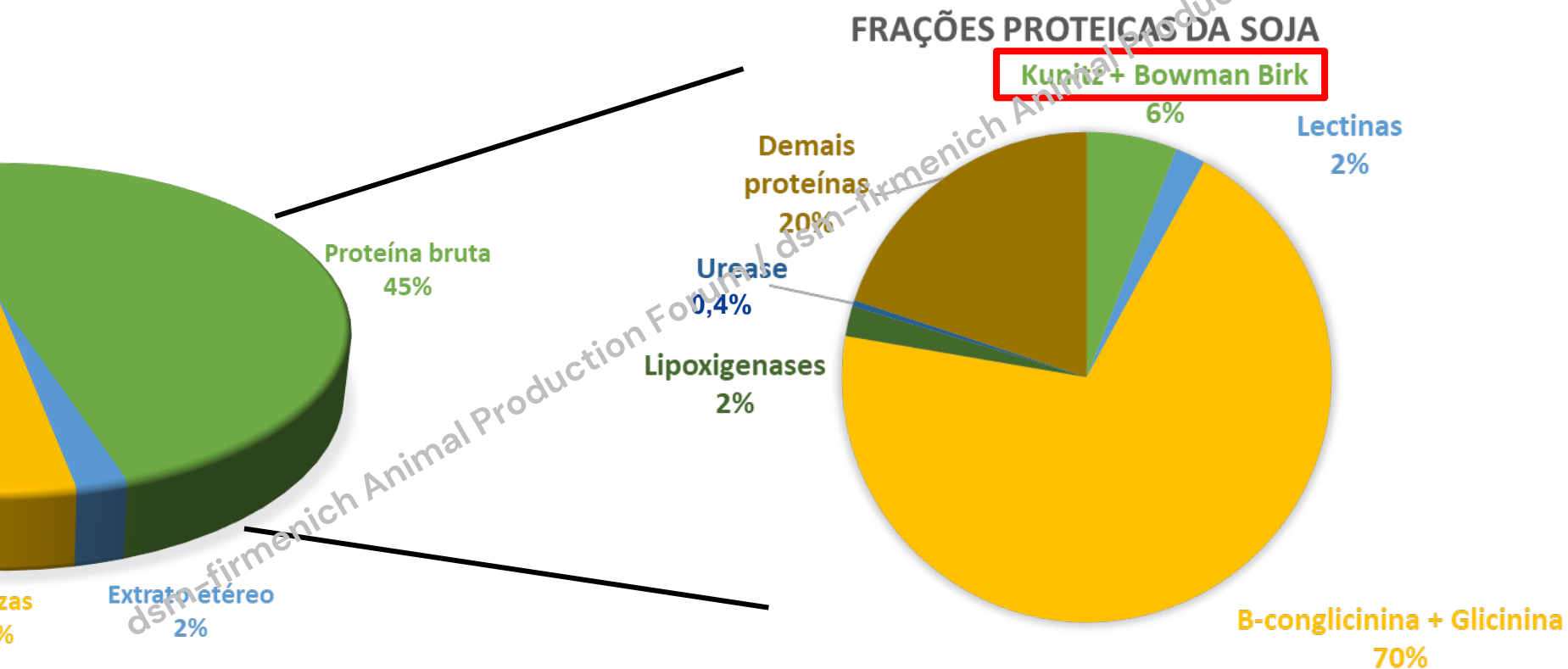


Fatores proteicos

COMPOSIÇÃO DO FARELO DE SOJA (% MN)

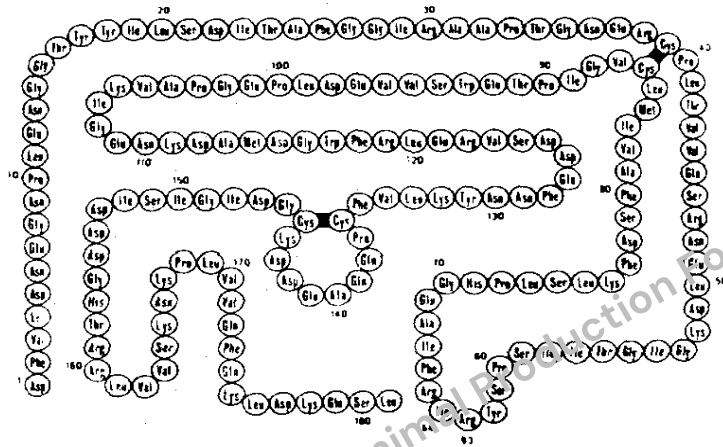


Fatores proteicos



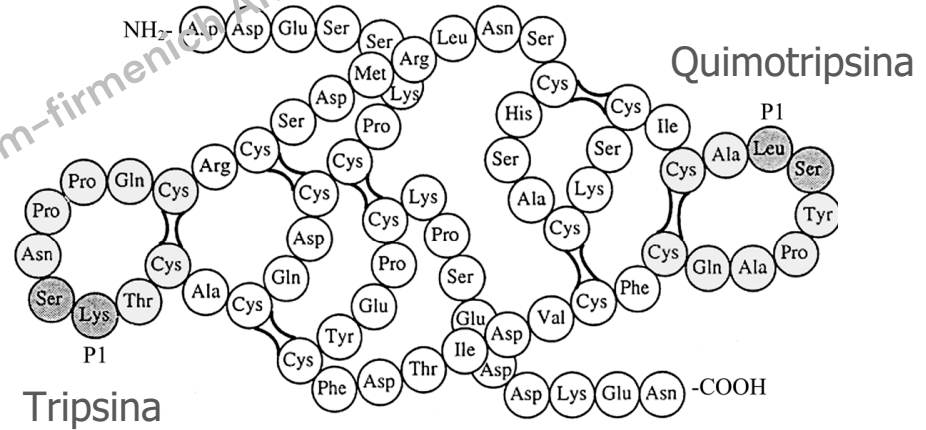
Fatores Kunitz e Bowman-Birk

Kunitz



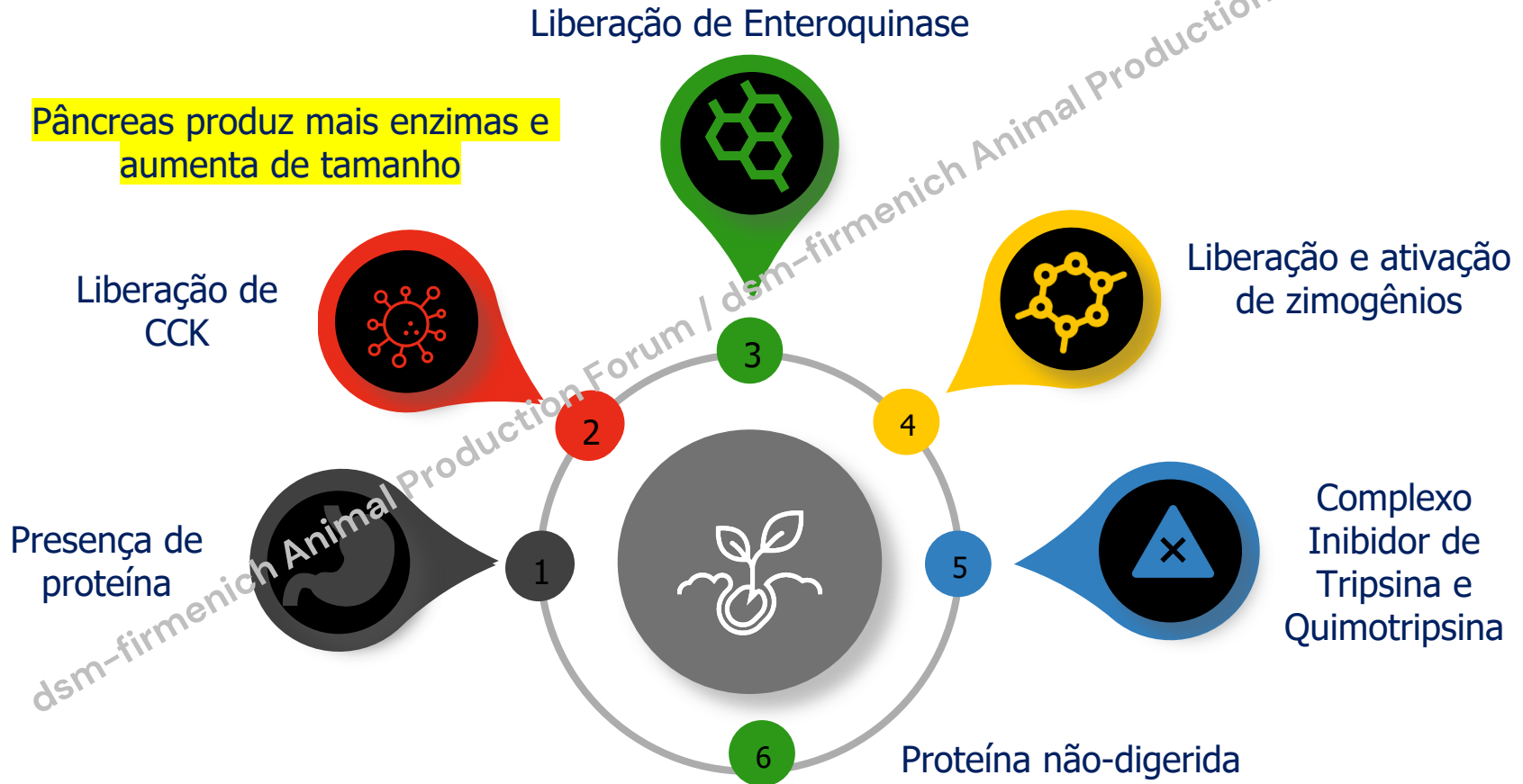
Um sitio ativo
181 aminoácidos
2 ligações disulfeto

Bowman-Birk



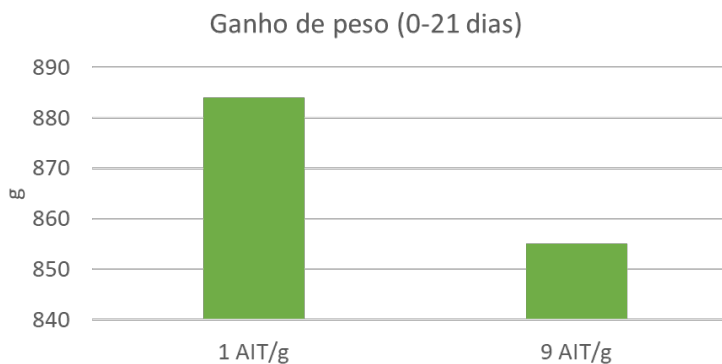
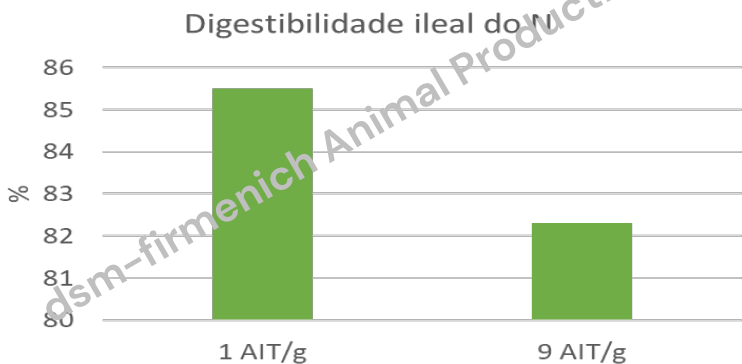
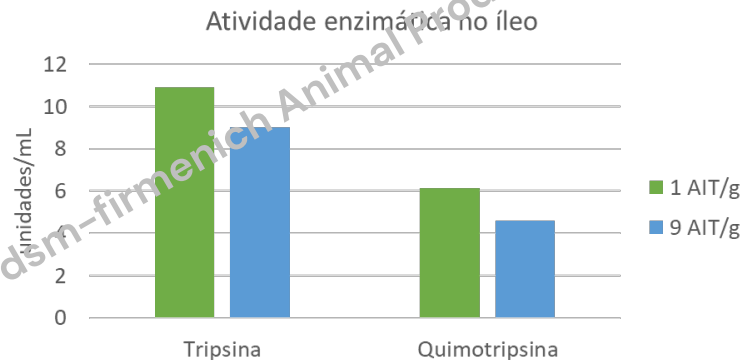
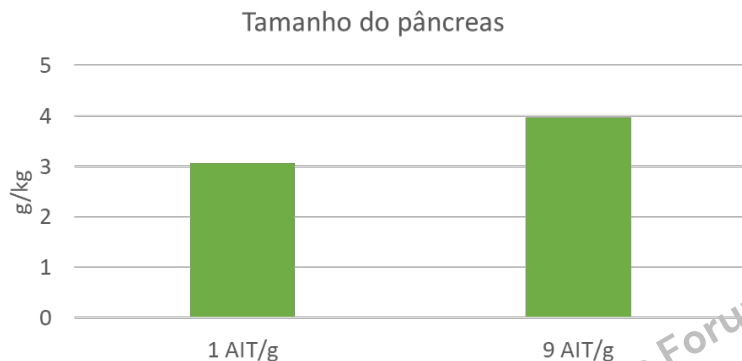
Dois sitios ativos,
71 aminoácidos,
7 ligações disulfeto

Fatores Kunitz e Bowman-Birk



Fatores Kunitz e Bowman-Birk

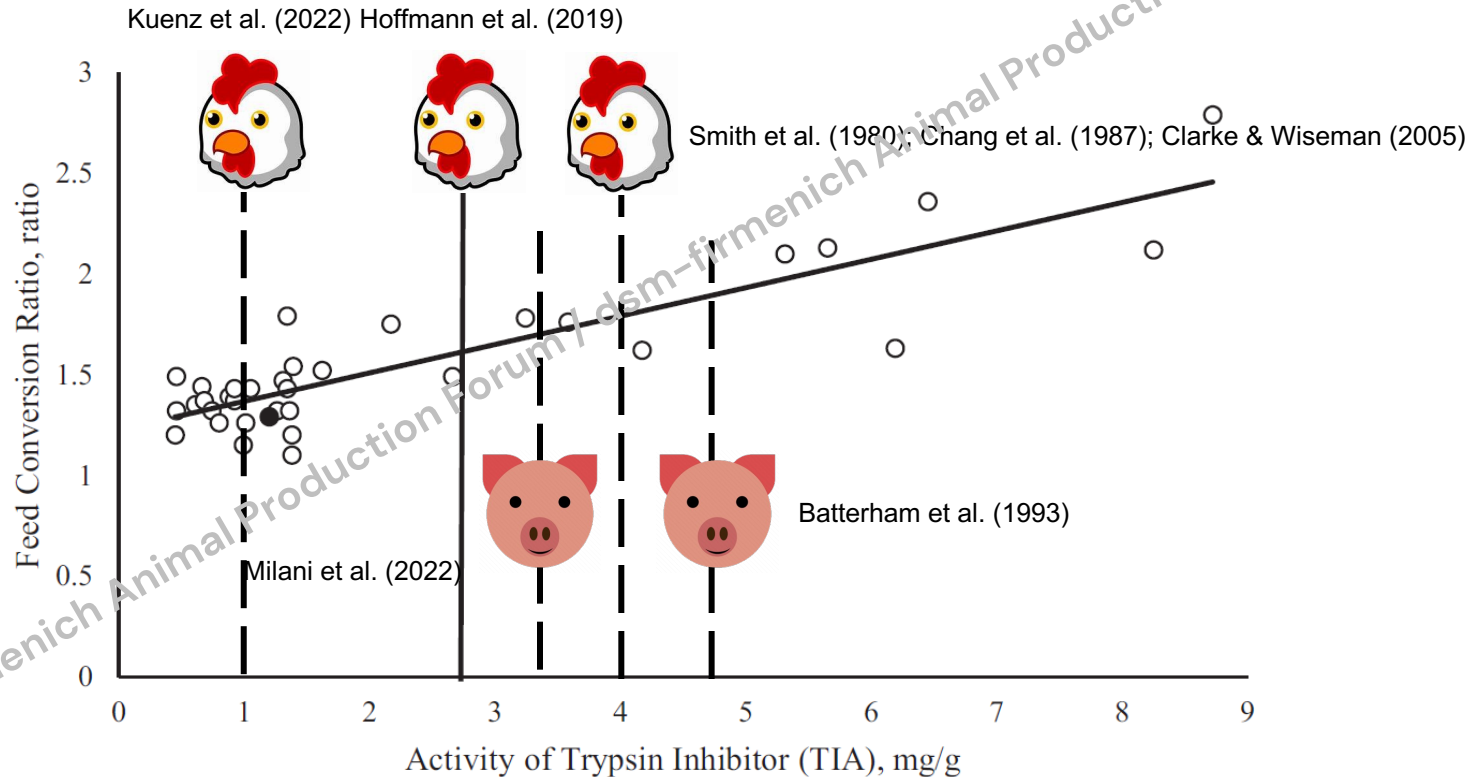
**34% de FS
nas dietas
Até 21 dias**



P<0,05

Adaptado de Aderibigbe et al. (2020)

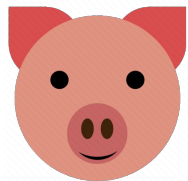
Fatores Kunitz e Bowman-Birk



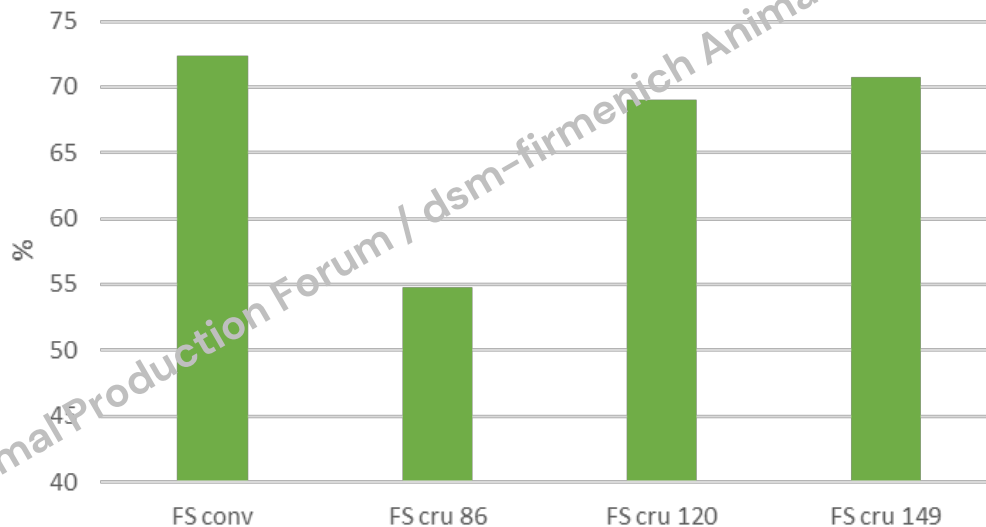
35% de FS
nas dietas
Até 21 dias

Fatores Kunitz e Bowman-Birk

30% de FS nas dietas
25-36 dias de idade



CDAi PB



AIT (mg/g)	2,4	3,5	1,4	1,1
Urease	0,02	0,10	0,03	0,03
PSKOH (%)	84,1	94,9	88,6	86,5

Adaptado de Milani et al. (2022)

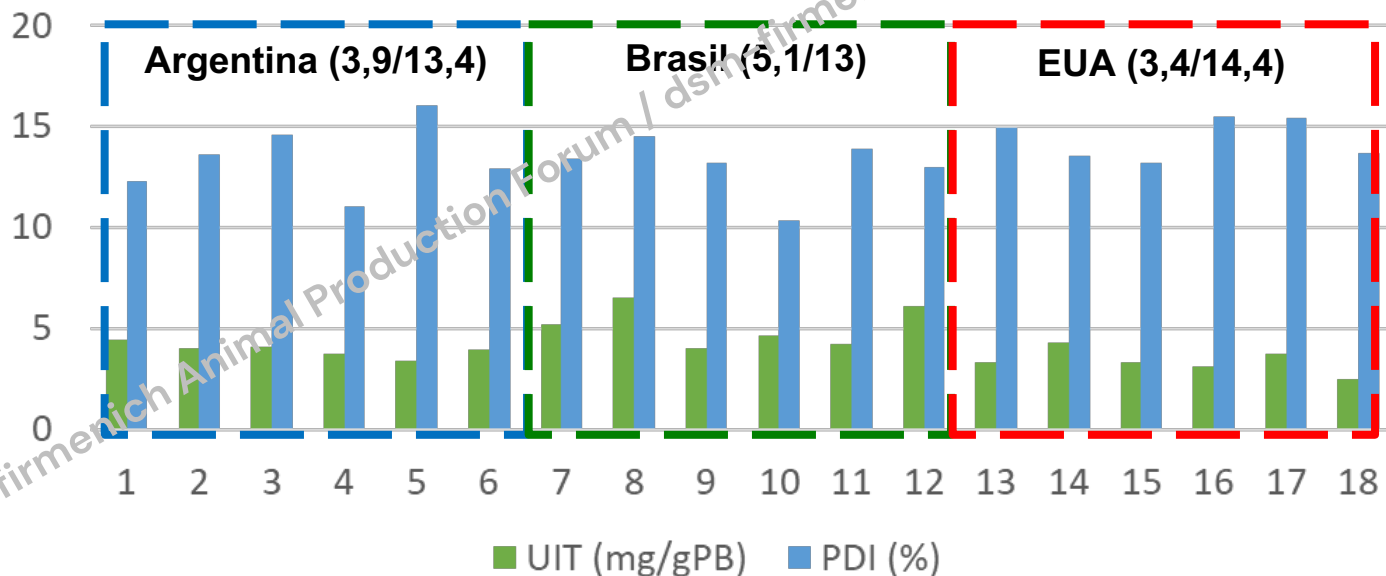
Fatores Kunitz e Bowman-Birk

CDI_p PB = 77%^b

CDI_p PB = 78%^{ab}

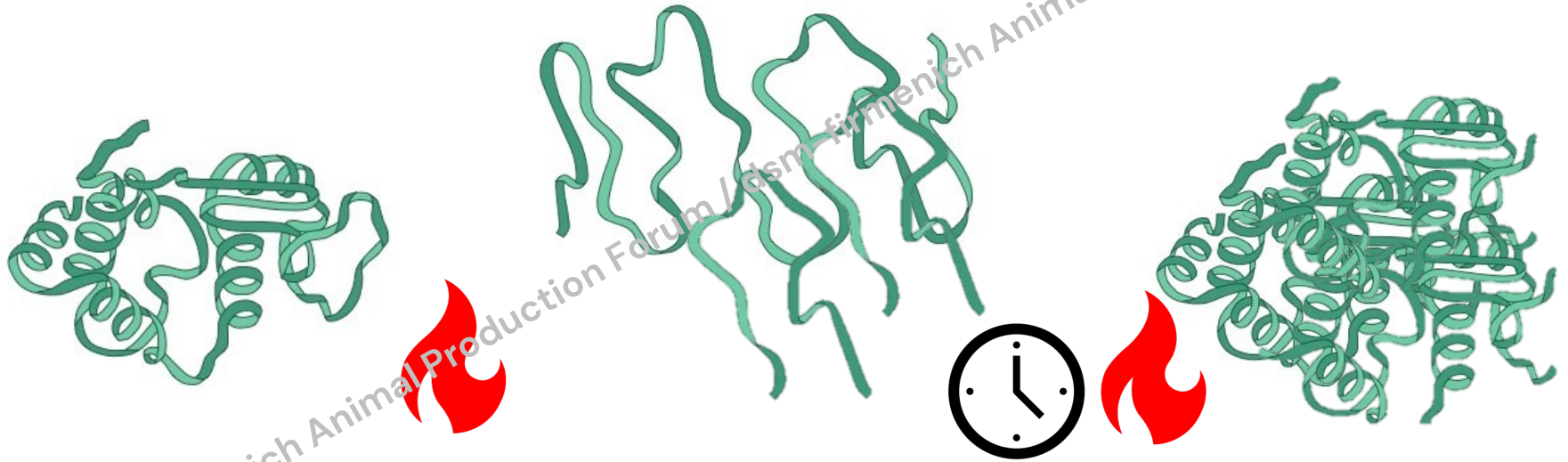
CDI_p PB = 80%^a

Inibidor de tripsina (mg/g) e PDI (%) de farelos de soja

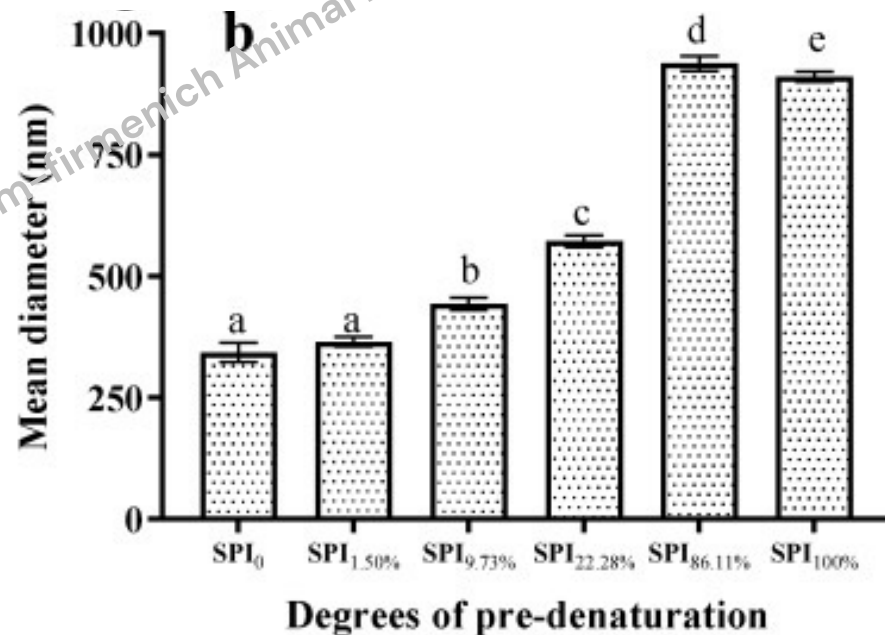
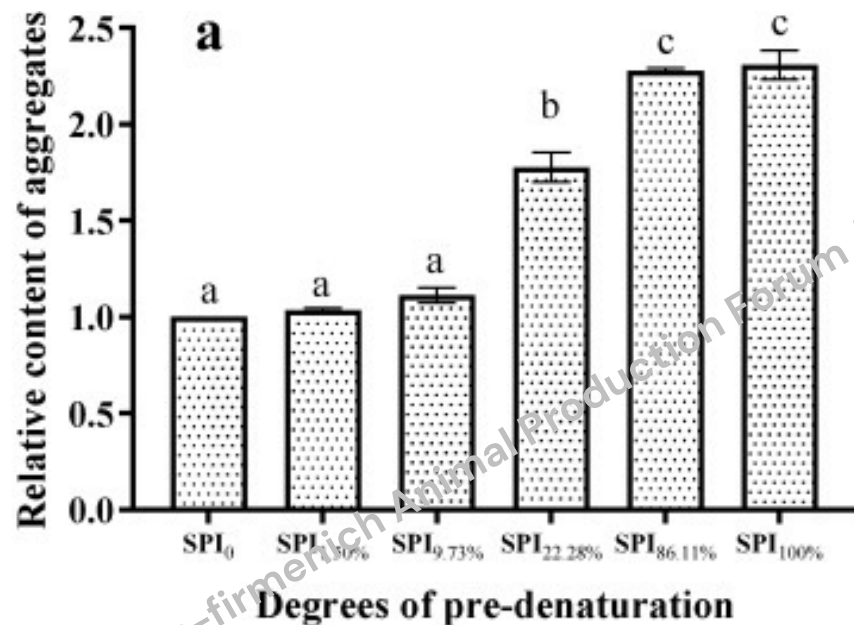


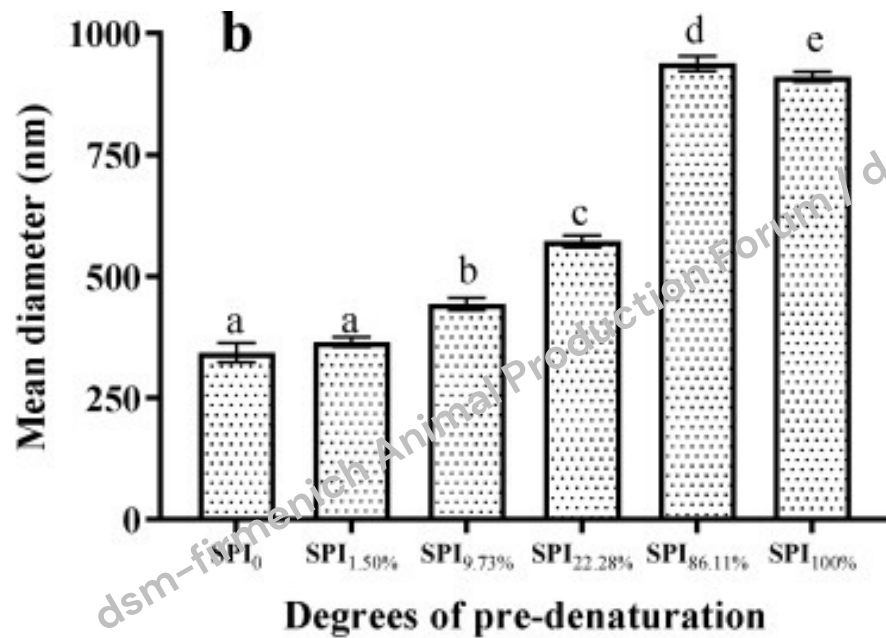
Adaptado de Goerke et al. (2012)

Qualidade do processamento



Qualidade do processamento

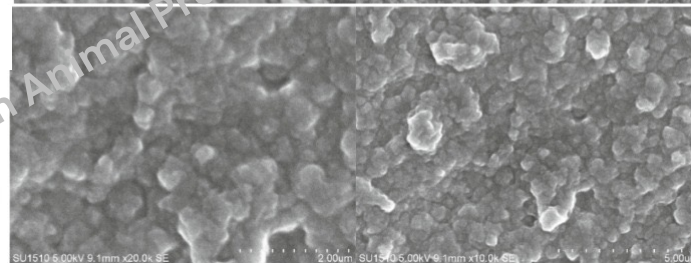




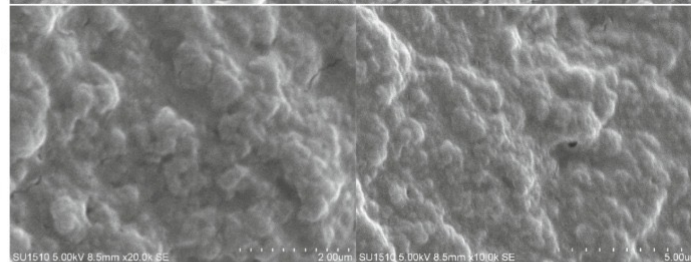
0%



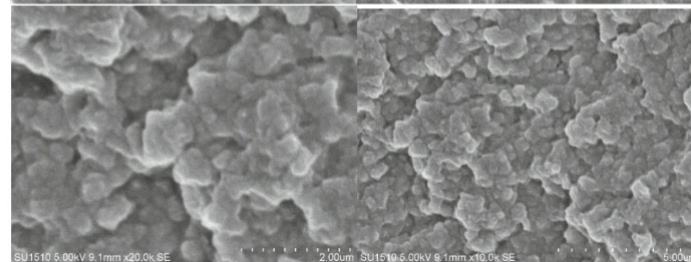
22%



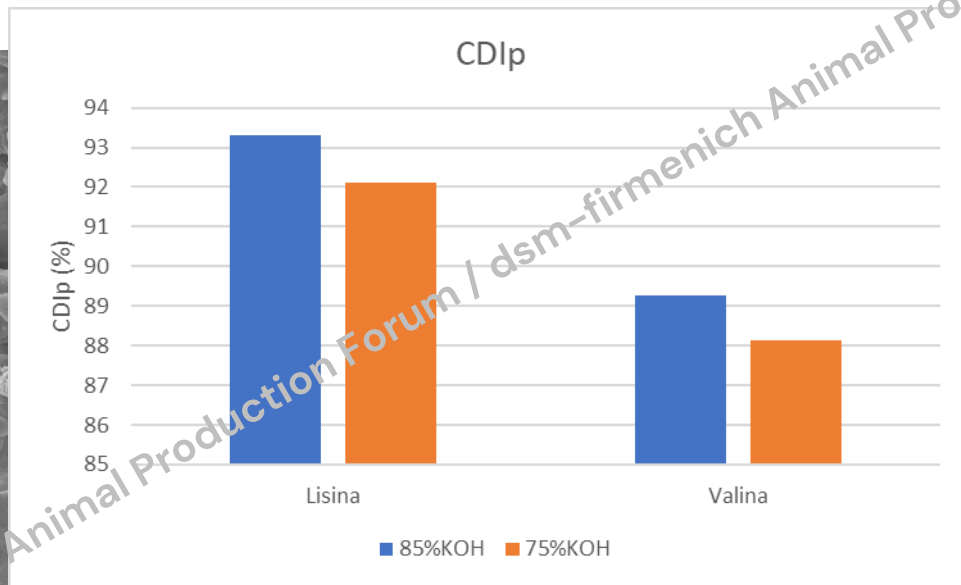
86%



100%



Qualidade do processamento

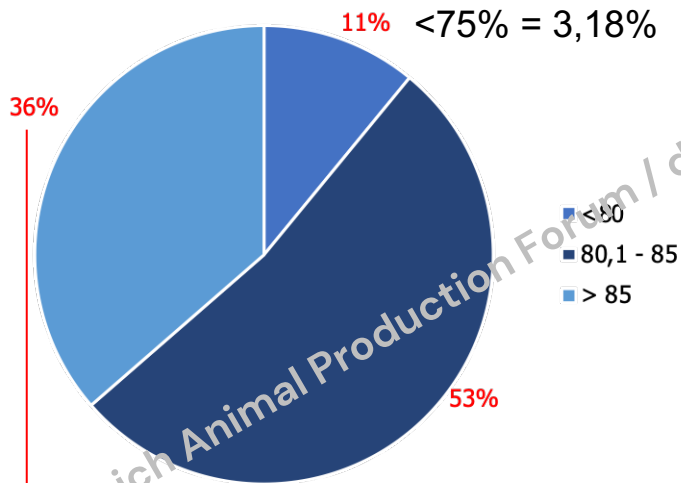


Farelo de soja 85% KOH
0,09 urease

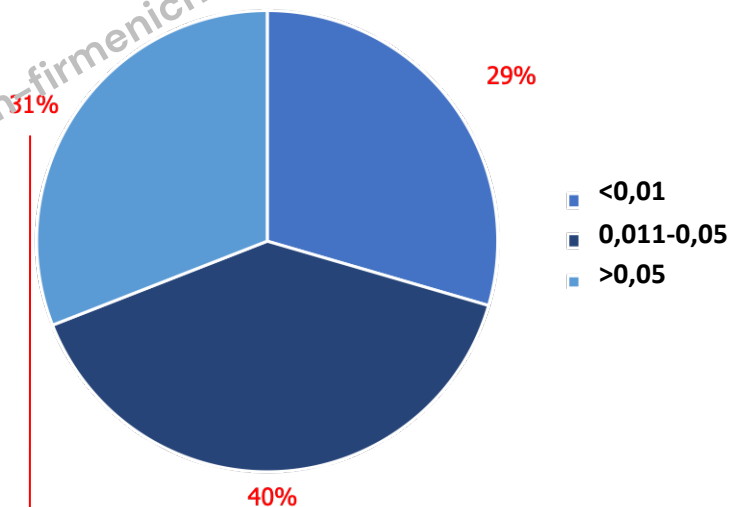
Farelo de soja 75% KOH
0,01 urease

Qualidade do processamento

Solubilidade KOH



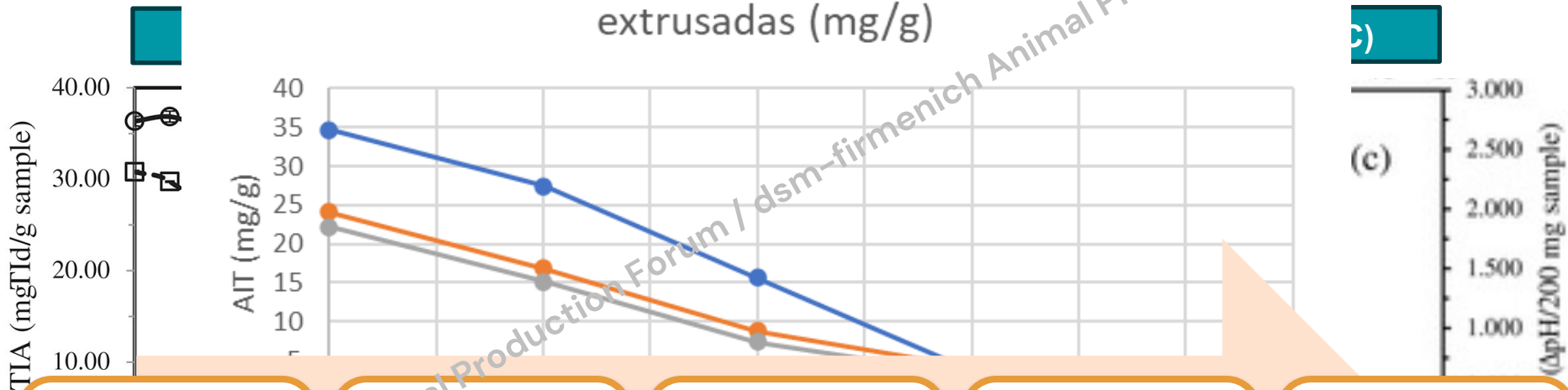
Atividade Urease (Δ pH)



283 amostras obtidas da agroindústria produtora de frangos de corte

Qualidade do processamento

Atividade inibitória de tripsina em sojas extrusadas (mg/g)



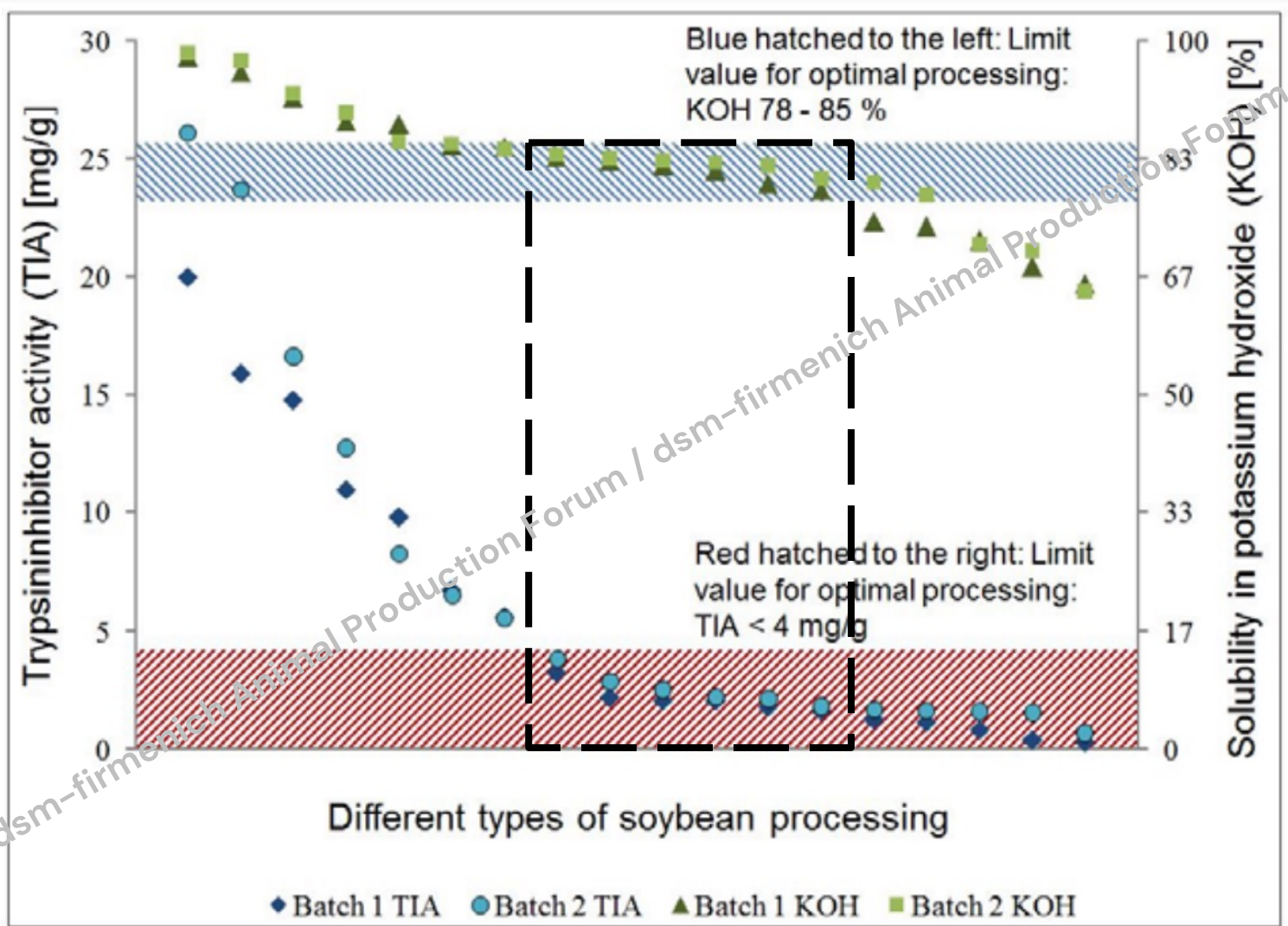
Lipoxigenases

Urease

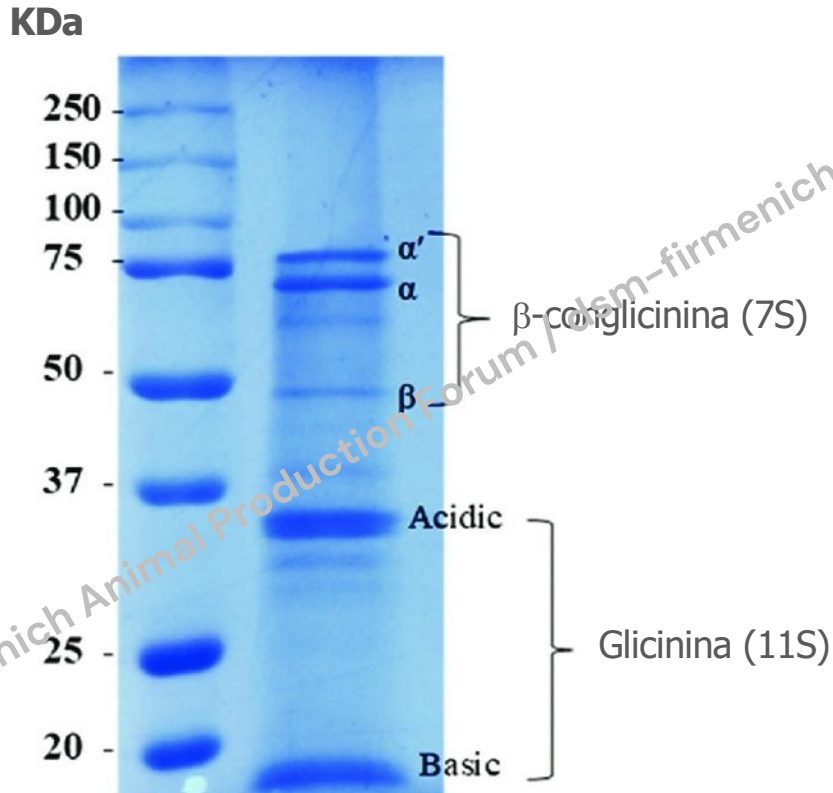
Lectinas

Kunitz

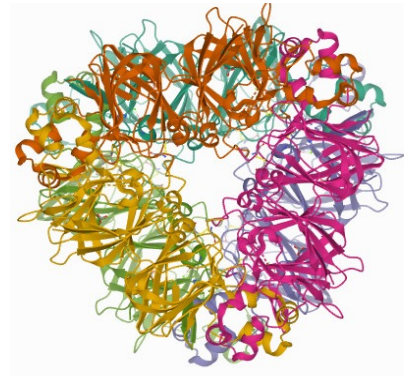
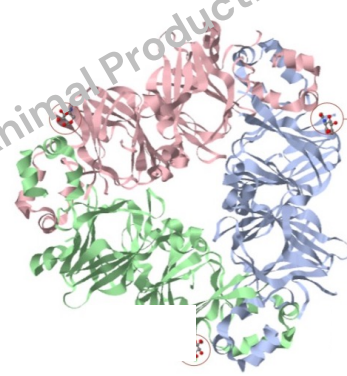
Bowman-Birk



Glicinina e β -conglucininina



Dumitrașcu et al. (2019)



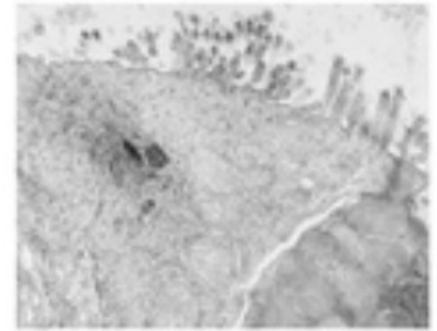
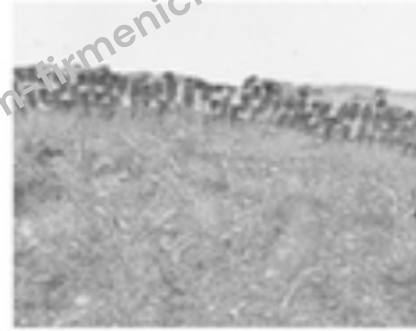
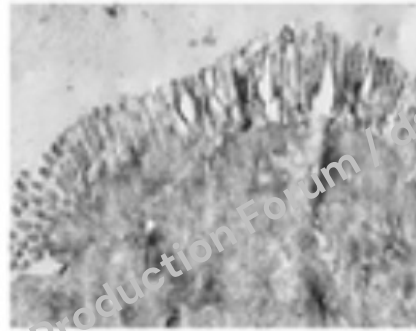
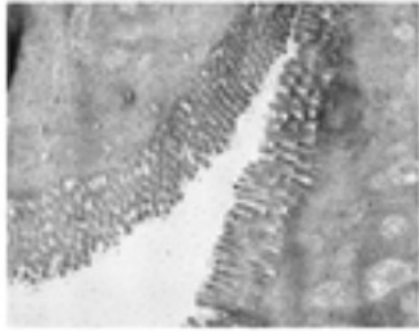
Adachi et al. (2003); Murayama et al. (2019)

Glicinina e β -conglycinina

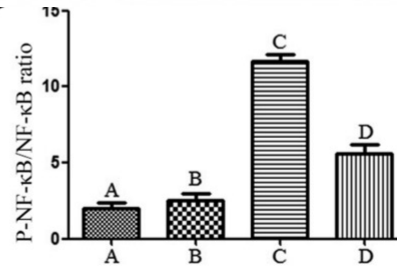
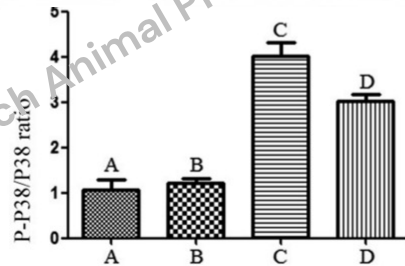
Expressão gênica de proteínas que ativam reações pró-inflamatórias e apoptóticas (JNK, P38 e NF- κ B) no duodeno de leitões



b



D – Dieta + 4% Glicinina



Potencial alergênico = β -conglycinina > Glicinina > soja expandida

20-27 dias de idade

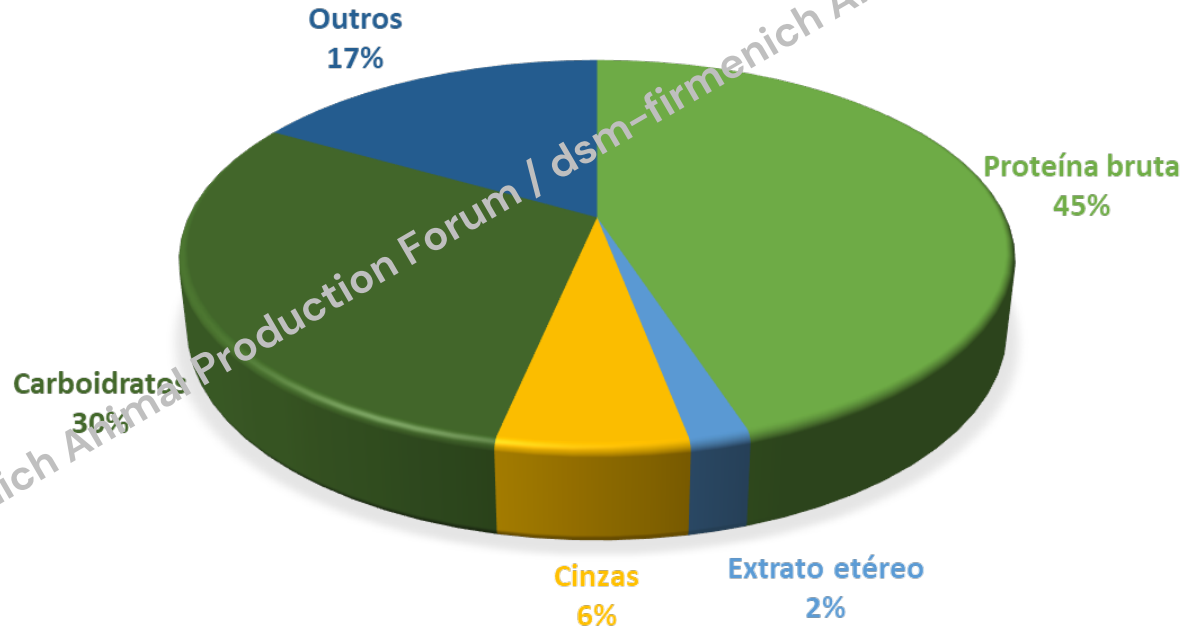


Carboidratos



Soja (*Glycine max*)

COMPOSIÇÃO DO FARELO DE SOJA (% MN)



Soja (*Glycine max*)

CARBOIDRATOS DA SOJA

PNA solúveis
2,8%

Oligossacarídeos
6,2%

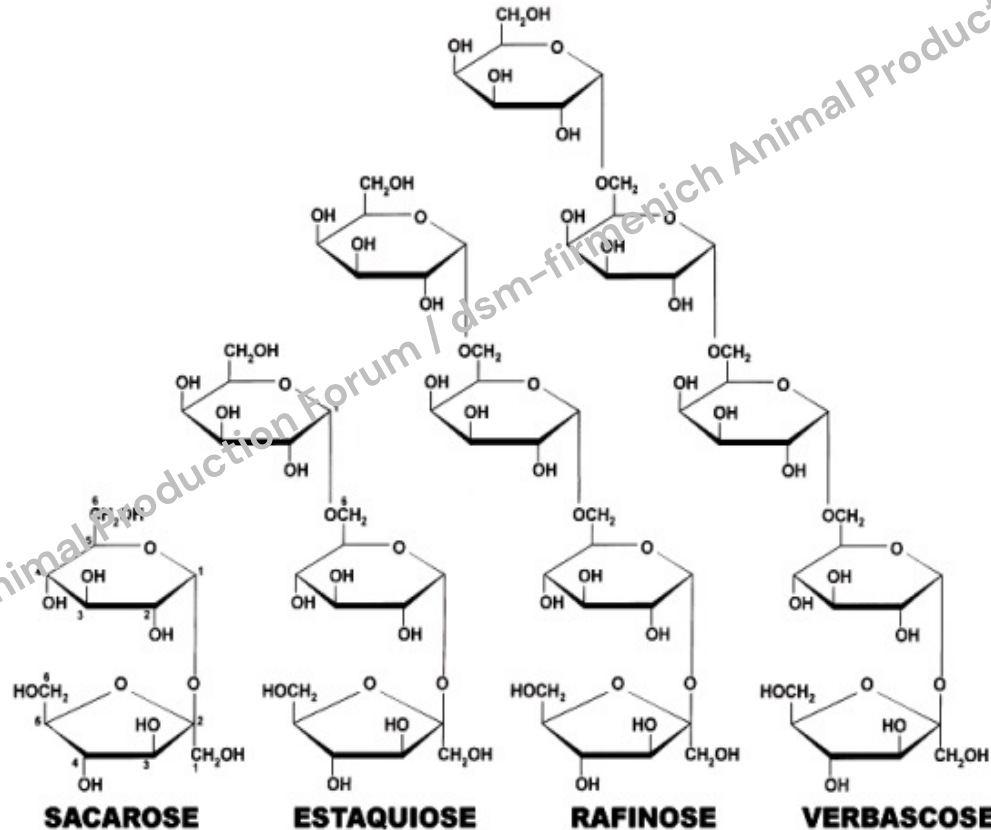
Sacarose
6%

Outros
17%

Carboidratos
30%

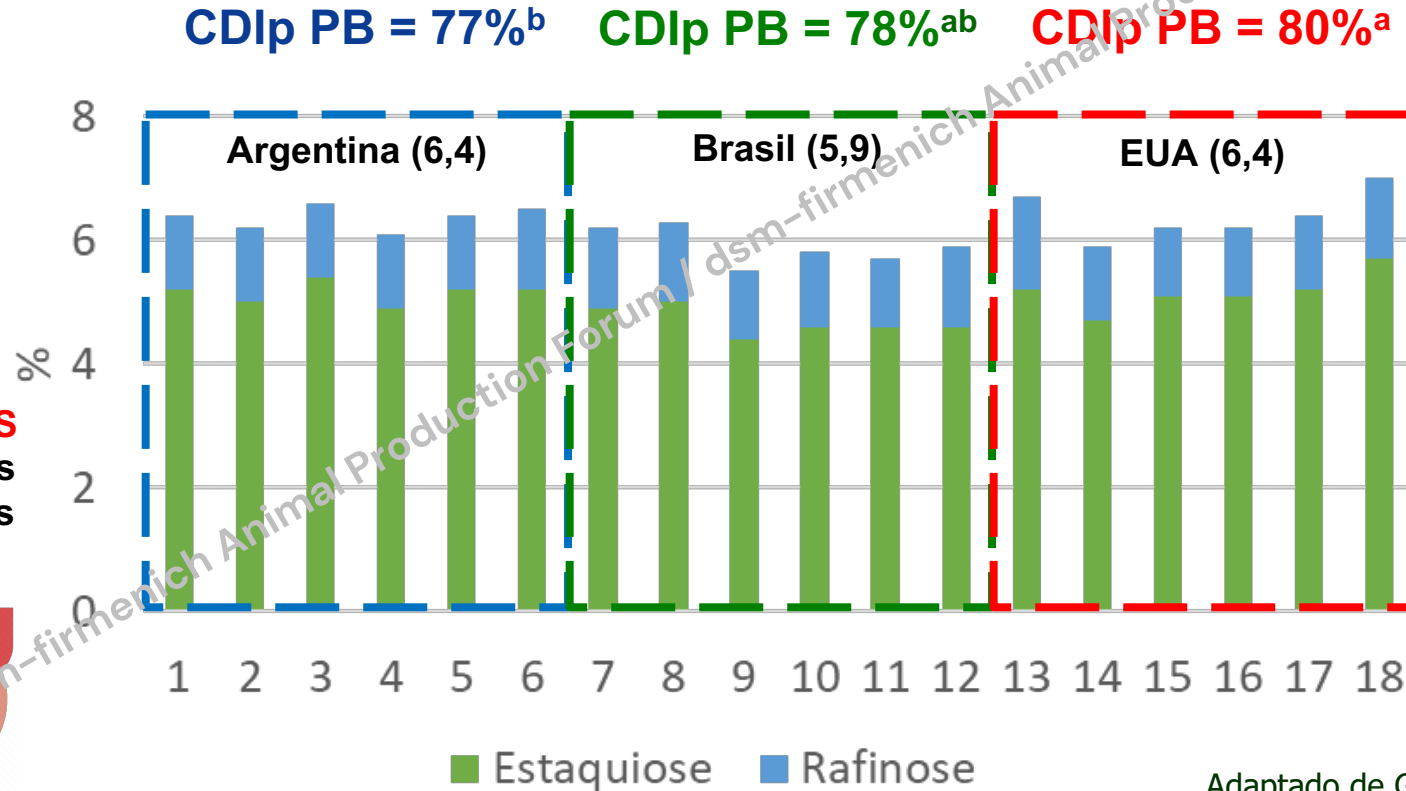
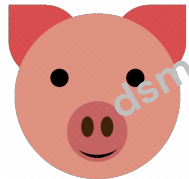
Viscosidade mL/kg (Ward, 2021)	
Soja	2,00
Milho	0,33
Farelo de trigo	3,31
Aveia	8,78
Cevada	9,91

Oligossacarídeos

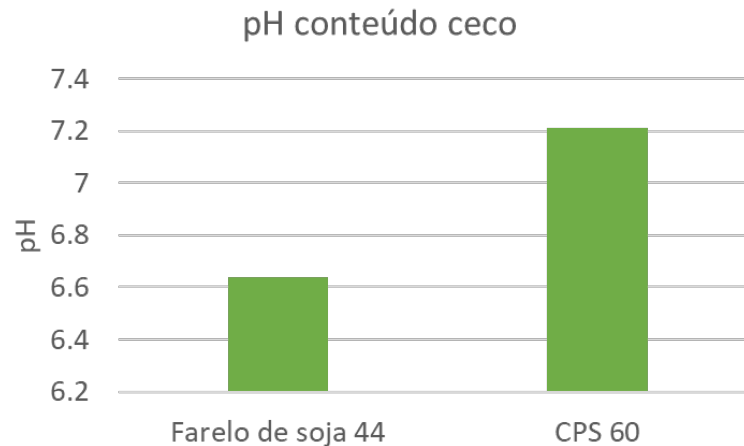
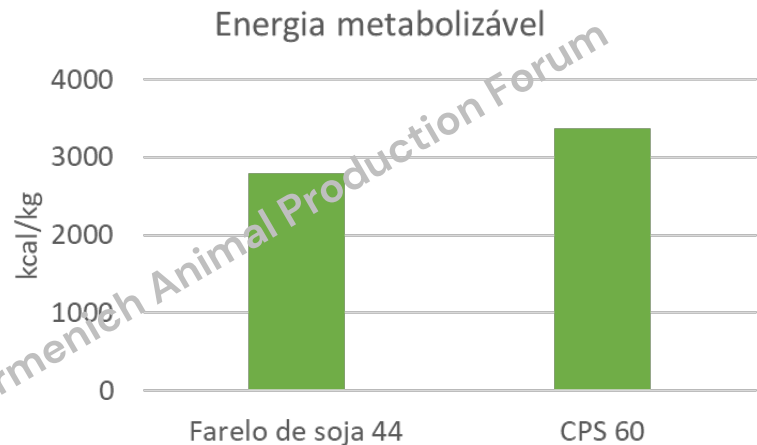
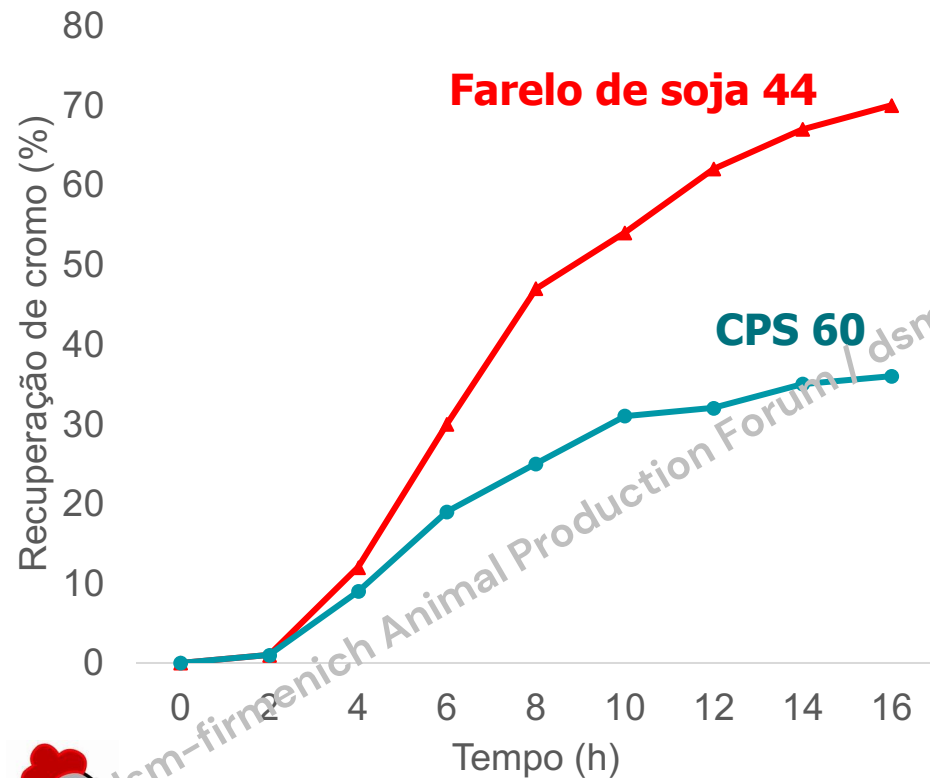


Oligossacarídeos

25% de FS
nas dietas
35-67 dias
de idade



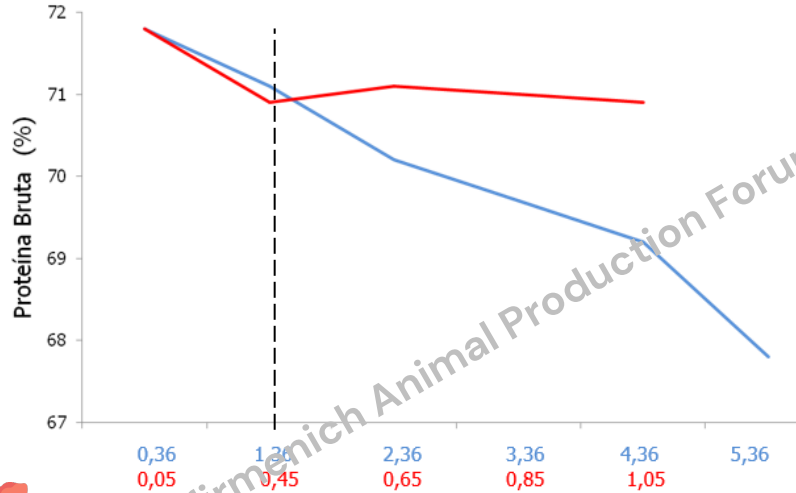
Adaptado de Goerke et al. (2012)



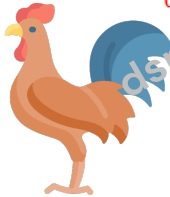
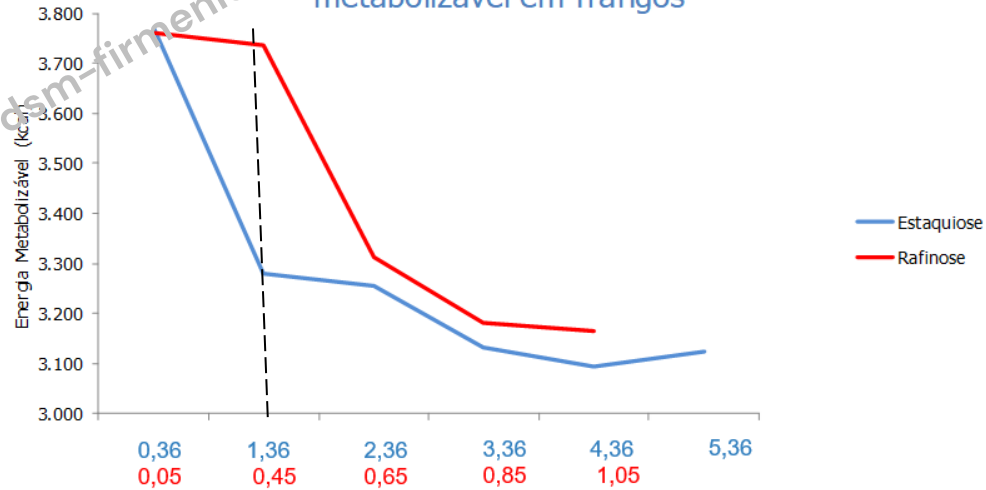
Adaptado de Coon et al. (1989)

Oligossacarídeos

Influência de Estaquiiose e Rafinose na digestibilidade da PB para Frangos



Influência da Estaquiiose e Rafinose na energia metabolizável em frangos

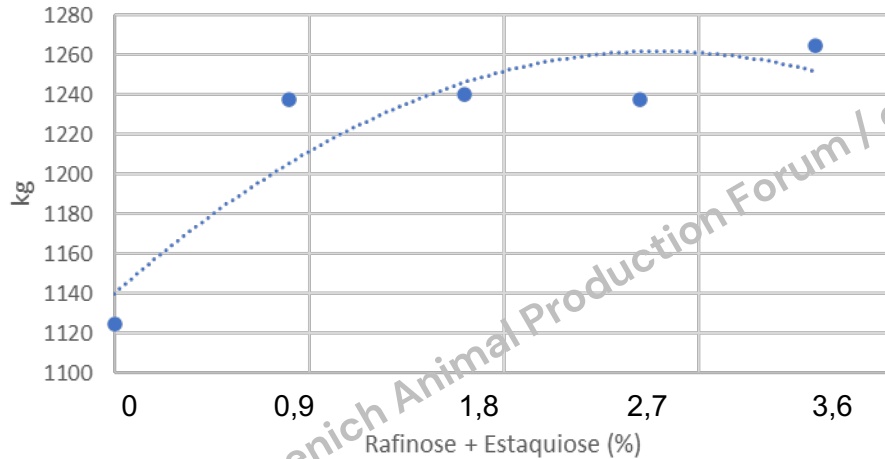


Adaptado de Leske et al. (1993)

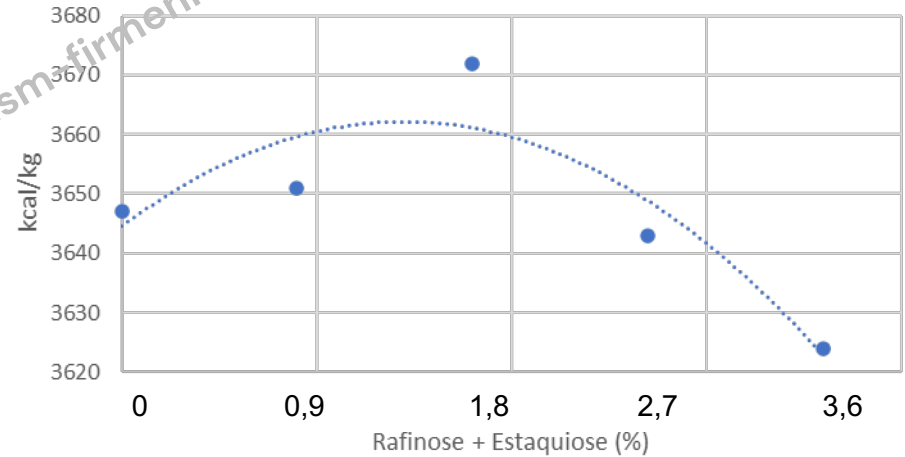
Oligossacarídeos



Ganho de peso (1-21 dias)



EMAn (1-21 dias)





ORIGINAL ARTICLE

Soybean oligosaccharides combined with probiotics reduce faecal odour compound content by improving intestinal microbiota in pigs

Lei Du, Xiaoyu Qiu, Siyuan Zhu, Jingbo Liu, Jing Wang, Qi Wang, Zuohua Liu, Feiyun Yang, Tingting Yun, Renli Qi 

First published: 14 October 2022 | <https://doi.org/10.1111/jpn.13782>

Lei Du and Xiaoyu Qiu contribute equally to this work.

Considerações finais



- ◆ Resultados consistentes em relação à redução da digest. de aa e aumento do pâncreas com o aumento dos inibidores de proteases.
- ◆ Proteína solúvel KOH mínima 70% x 75%?
Urease máxima 0,05 x 0,2?
- ◆ Difícil isolar os fatores dos estudos.
- ◆ **Priorizar atenção:** Inibidores de proteases > Solubilidade proteica* > PNA e Oligossacarídeos > β -conglucina.



Obrigado | Gracias | Thank you