Can kefir reduce coccidial oocysts output in goat kids?

G. Daş, C. Ataşoğlu, H.I. Ülkü, C. Tölü, T. Savaş, İ.Y. Yurtman

Department of Animal Science, Çanakkale Onsekiz Mart University, Çanakkale, Turkey

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Weaning, as a stressful event...

- Radical changes in feeding habits and separation of mother and young are the most noticeable stressors…
- Transition from a non-ruminant to a ruminant is a critical time in which digestion processes usually represent high vulnerability to gastro-intestinal disturbances
- Coccidiosis remains as an important infection mostly in young and stressed animals…

Coccidiosis…

- The prevalance of sub-clinical coccidiosis…
- Growth losses due to sub-clinical infection…
- The control of infection is mainly based on…
- Probiotics may play an important role in control of coccidiosis
- There are attempts to use probiotics for controlling coccidiosis in broiler chickens..

Kefir, as a probiotic against coccidiosis?

- Kefir is a fermented milk drink and is consumed as a beverage with probiotic activity
- Kefir has different microbiological and chemical characteristics, resulting from the activities of bacteria and yeast of kefir grains during fermentation
- Easy to produce at home!

Kefir and gut microbial ecosystem..

- It stimulates lactic acid producing bacteria
- Increases colonization rate
- Prevents overgrowth of *E. coli*
- Since *Eimeria spp*. are intracellular parasites, they must invade host cells in order to replicate…
- Thus they must first of all adhere to epithelial surfaces
- Gut-adapted probiotic bacteria may compete for adhesion side and occupy common receptors on the epithelial cells

Hypothesis

- Kefir may play an important role in controlling coccidiosis in terms of reducing oocysts output…

Material and methods

Material and methods, groups

- Two groups (CONTROL vs. KEFIR)
- Saanen kids
- Twenty twins, ten for each group
- Equal genders and random allocation
- Weaning age: 47.6±2.7 d
- Weaning weight: 9.0±1.1 kg

Material and methods, treatment

Kefir group (KEF)	20 ml/d kefir before morning feeding
Control group (CONT)	Sham treatment (water given orally)

Composition of kefir*

- *Lactococcus spp.* (10^{10}-10^{11} c.f.u./g)
- *Lactobacillus spp.* (4.7 x 10^3 c.f.u./g)
- Yeast (10^3 c.f.u./g)

(*): Reported by producer company; Altınkılıç Süt Ürünleri, Çanakkale

Material and methods, management

- Started after weaning, lasted for 6 weeks
- Grower concentrate, alfalfa pellet and water *ad lib.*
- Daily feed consumption of groups...

Material and methods, faecal samples

- Individual faecal samples were taken three times per week, for six weeks
- Analyzed by using a modified McMaster technique

Material and methods, statistics

- Treatment (KEF & CONT)
- Gender (F & M)
- Weeks (1, 2 … 6)
- All possible interactions

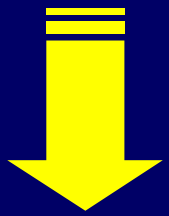
Body weight*

Growth rate*

(*): Analyzed by performing a repeated measures analysis of variance

Material and methods, statistics

- Treatment (KEF & CONT)
- Gender (F & M)
- Weeks (1, 2 ... 6)
- Sampling day within weeks (1, 2, 3)
- Treatment*weeks

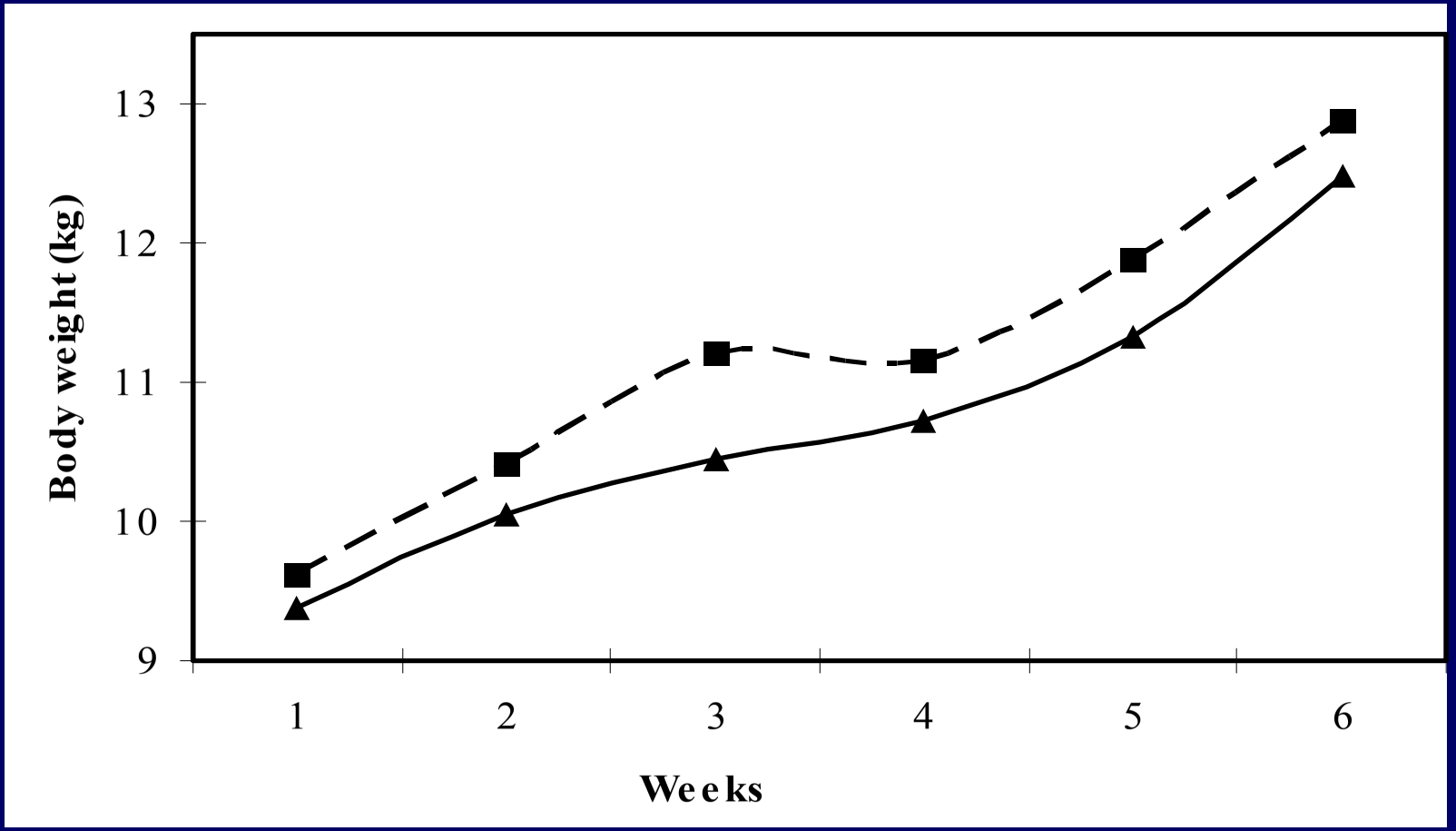


Log-OpG*

(*): Analyzed by performing a repeated measures analysis of variance


Results

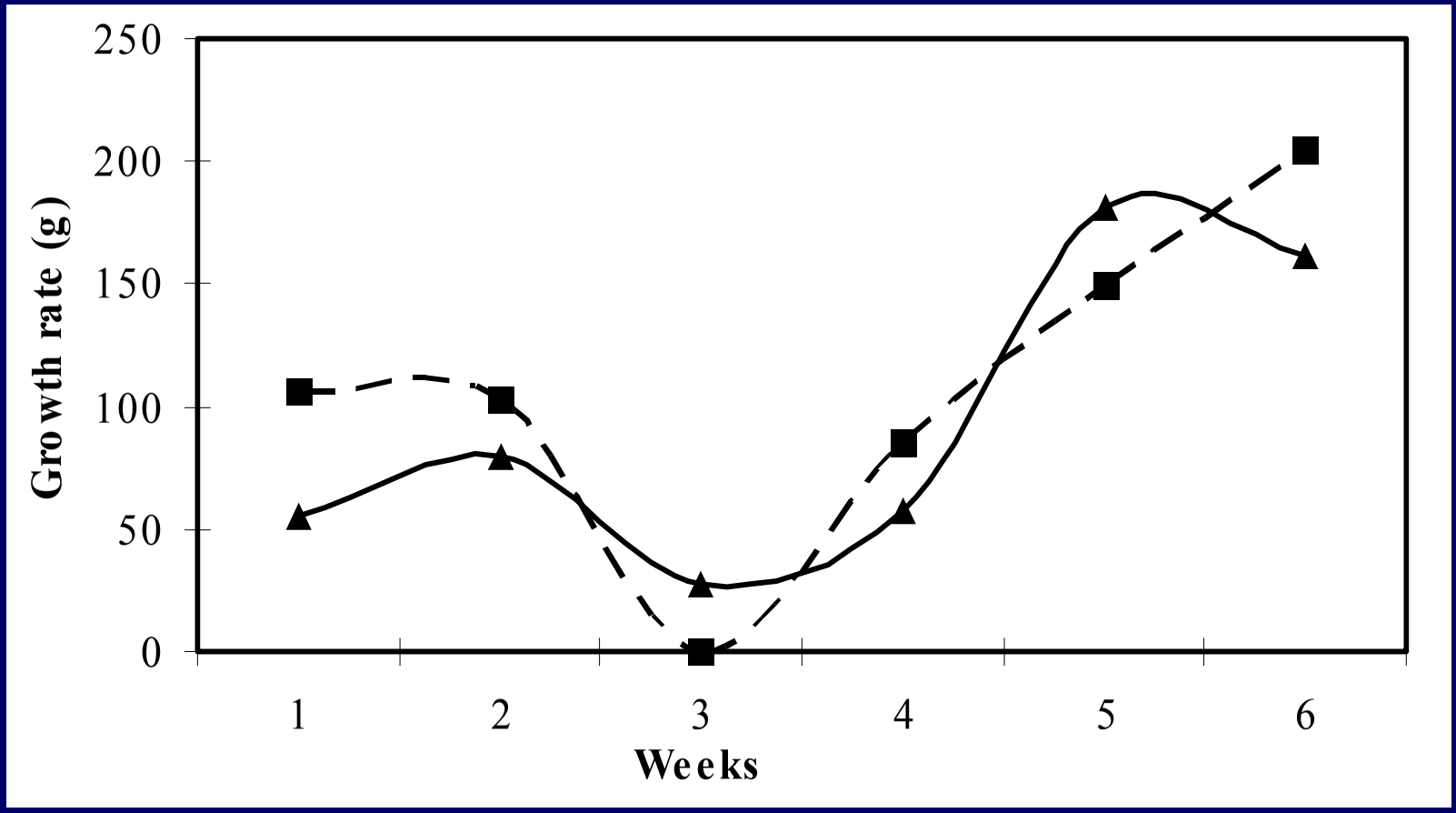
Body weight*



(—■— Control; —▲— Kefir)

(*): P>0.05

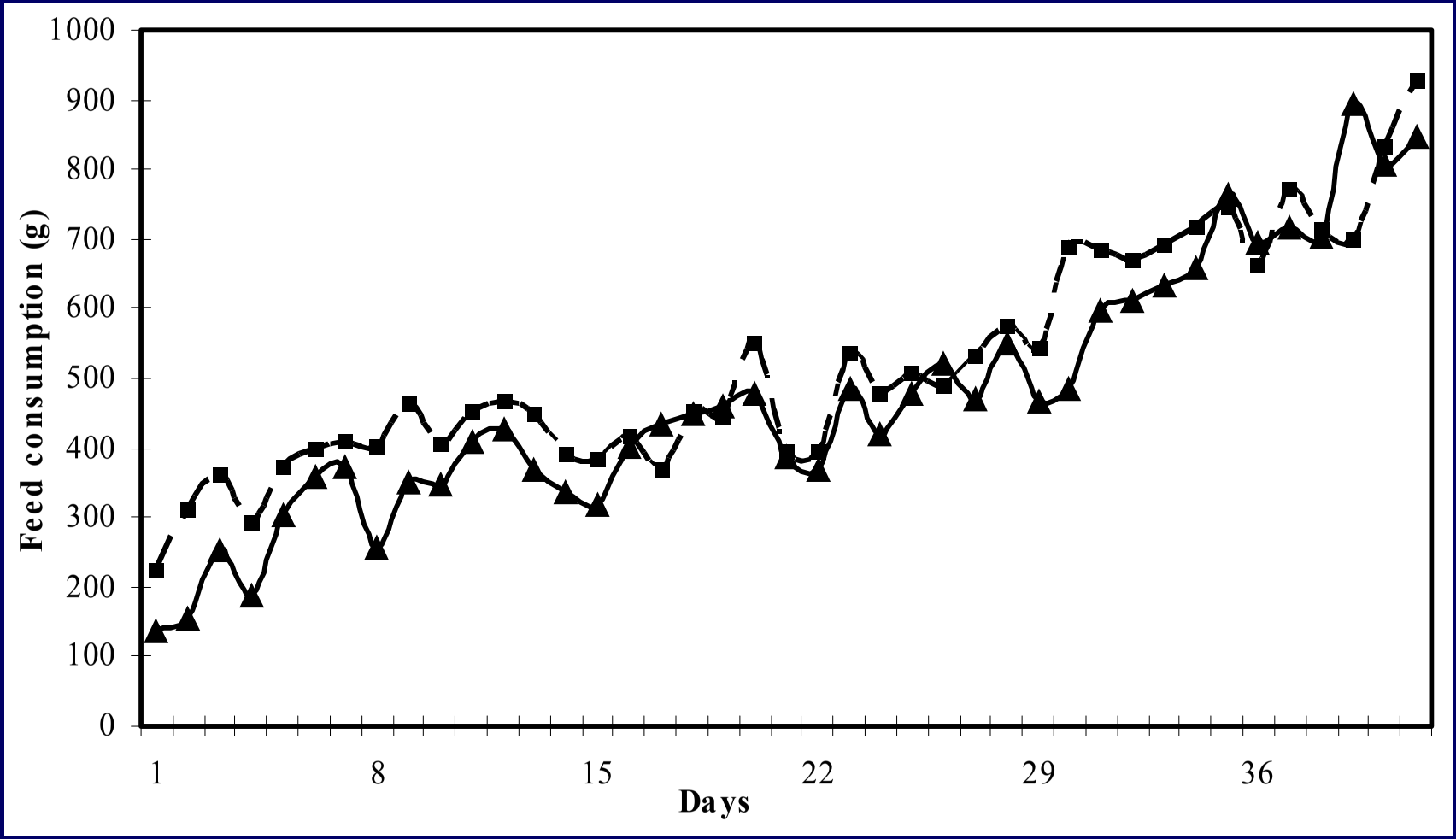
Growth rate*



(—■— Control; —▲— Kefir)

(*): P>0.05

Feed intake



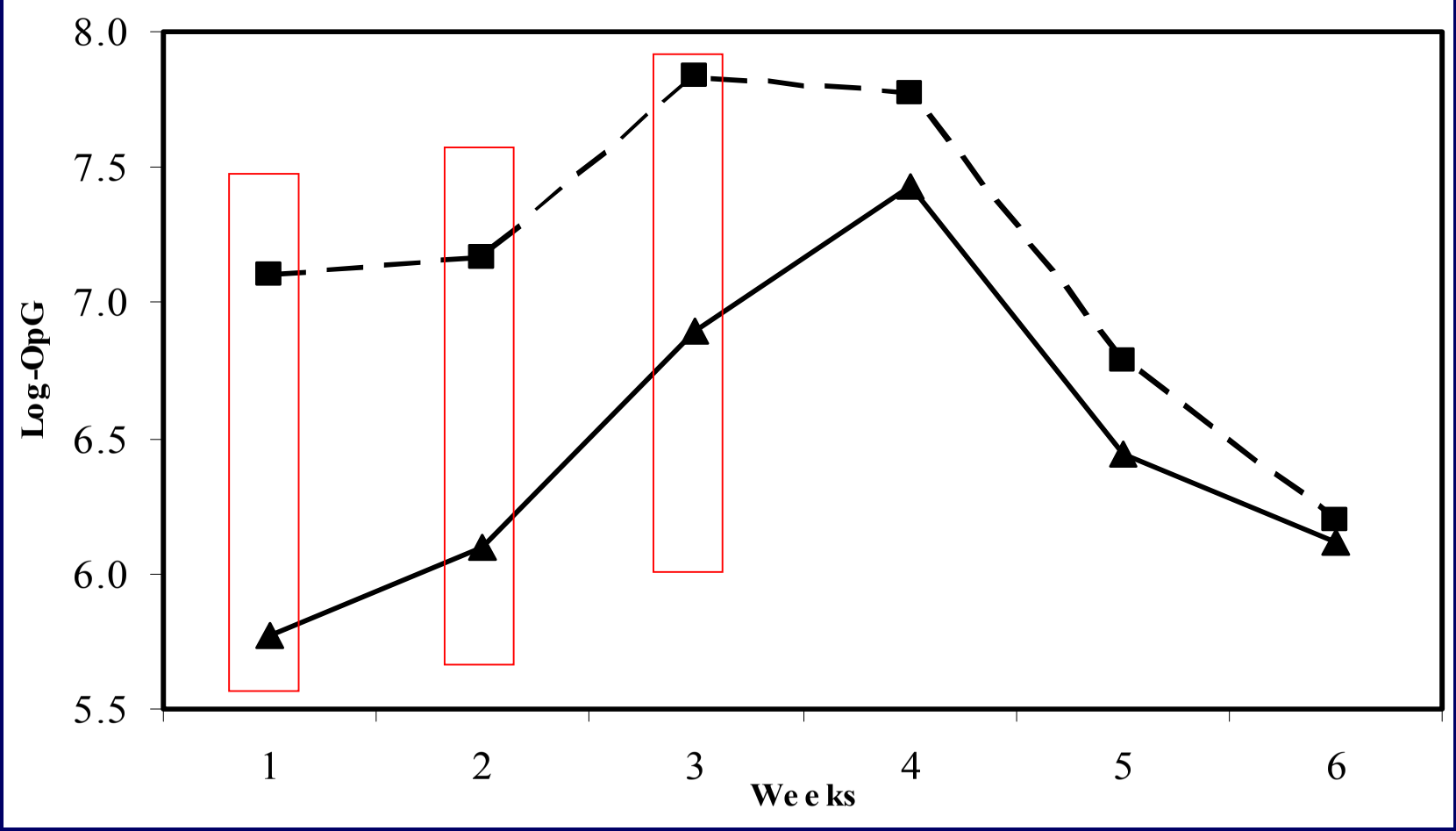
(—■— Control; —▲— Kefir)

Estimated dry matter and crude protein intake

Weeks	DMI, g/BW$^{0•75}$/day*		CPI, g/BW$^{0•75}$/day**	
	CONT	KEF	CONT	KEF
1	57.04	43.39	8.85	6.73
2	68.28	57.90	10.59	8.98
3	64.12	66.10	9.95	10.26
4	75.03	72.65	11.64	11.27
5	96.47	89.22	14.97	13.84
6	102.63	106.33	15.92	16.50

(*): DMI: Dry matter intake as the proportion of metabolic weight (BW$^{0.75}$)
(**): CPI: Crude protein intake as the proportion of metabolic weight (BW$^{0.75}$)

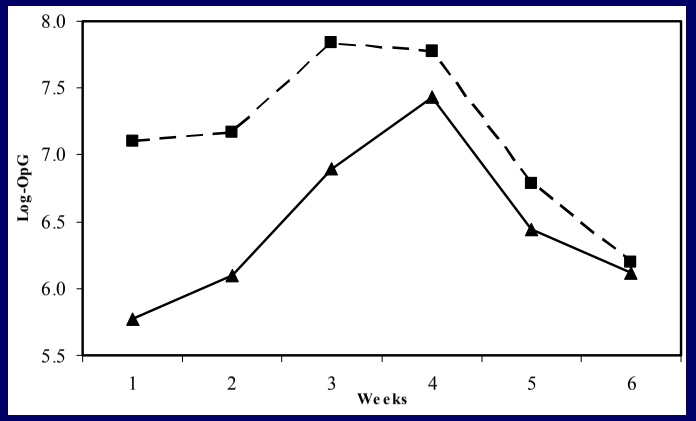
Oocysts output



(—■— Control; —▲— Kefir)

(*): P=0.097

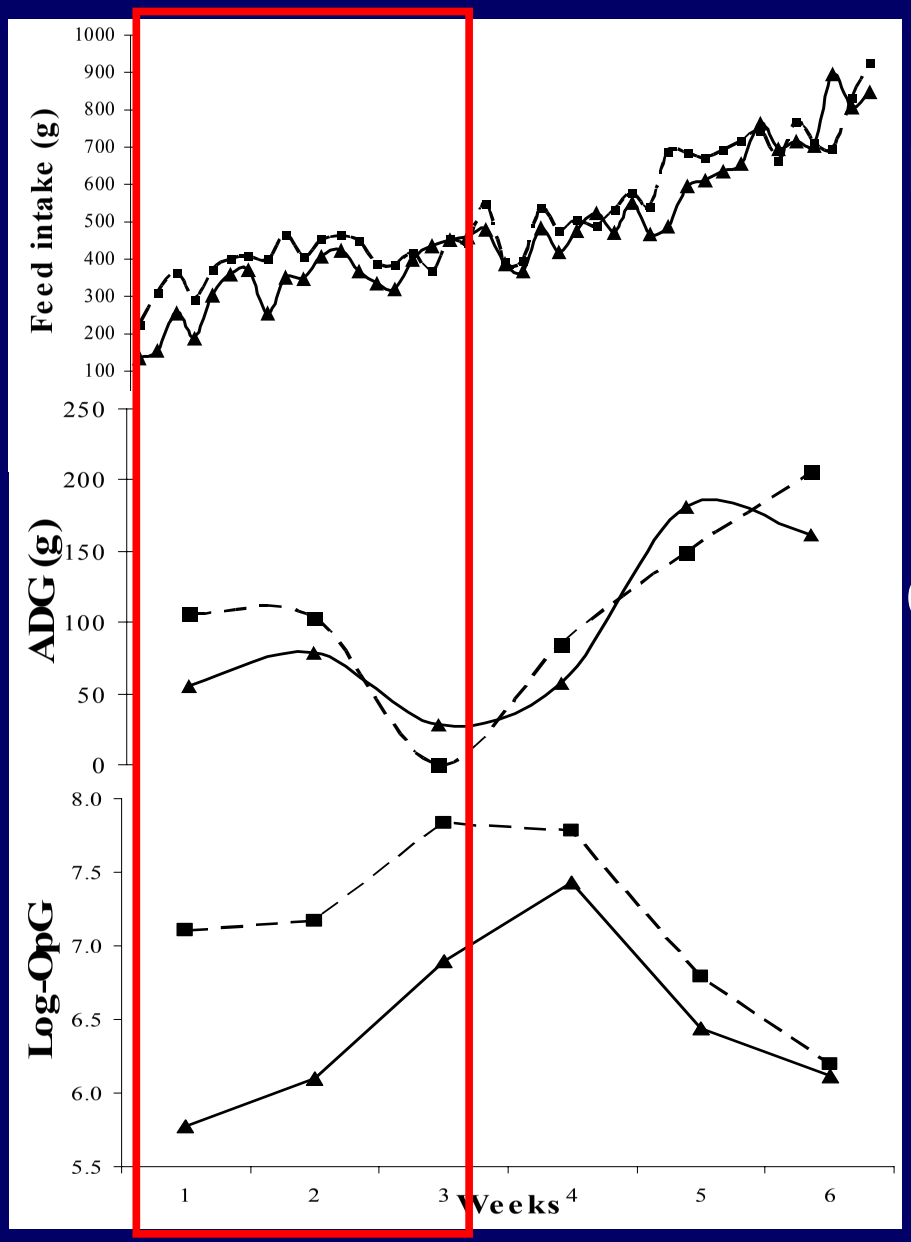
Oocysts output „up to“



1	*P = 0.005*
1 2	*P = 0.050*
1 2 3	*P = 0.041*
1 2 3 4	*P = 0.067*
1 2 3 4 5	*P = 0.077*
1 2 3 4 5 6	*P = 0.097*

Weeks of study

All together….



Feed intake inadequate!

Growth rates low!

OpG is lower in KEFIR group!

Conclusions

- Inadequate nutrient intake occurs after weaning
- Kefir does not have any effect on growth (in short terms)
- Kefir can reduce oocysts output in the early weaning period

Thank you for your attention