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Carbo vegetabilis at 30 CH and Belacol 100 in the treatment of swine diarrhea

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ABSTRACT

Carbo vegetabilis at 30 HC, a homeopathic remedy, and Belacol 100, were economic and clinically compared in treating piglets with diarrhea. A sample of eighty 10-day old animals with an initial mean weight of 2.6 kg distributed into two groups was studied. Group I received ten sublingual drops of *Carbo vegetabilis* at 30 HC every 12 hours for five days, while Group II was orally administered 260 mg/kg of Belacol 100 for five days. A chi-square test of 5 % significance and an analysis of variance (ANOVA) were performed. Piglet appetite showed no significant differences on the third and fifth days under treatment; however, weight gain was highly significant ($P < 0.001$) in those homoeopathically treated. On the other hand, this therapy proved to be more economic than the conventional one.

Key Words: *diarrhea, piglets,* Carbo vegetabilis *at 30 HC, homeophaty, Belacol 100*

INTRODUCTION

At the General Assembly of Marché du Porc Breton, held in April 2010, The US the Secretary of Agriculture through the Food and Agricultural Policy Research Institute (FAPRI), presented the estimates for meat consumption up to 2019, where it was shown that the annual mean of pork consumption was 40 kg per capita (US Secretary of Agriculture, 2010).

It is important to point out the technological development of mankind and irresponsible behavior of man, has led to deterioration of environmental conditions, and low productive rates, along with poor quality of milk and meat. Moreover, the accumulation of toxic wastes from antimicrobials and other conventional medications has contributed great deal to it (Briones, 2008).

One of the most frequently observed digestive entities in swine is diarrhea, which according to allopathic is caused by a number of factors, including handling and pathogenic agents (Cabrera, 2009).

In the past decades homeopathy has developed in many countries as a therapeutic option to certain diseases resistant to conventional treatment schemes. Within the homeopathic products used today, charcoal (*Carbo vegetabilis*) is the most powerful absorber (Kent, 2004). Charcoal neutralizes the stench from strong intestinal fermentation. It is very useful in the treatment of diarrhea, as it takes in bacteria causing this intestinal disease.

The aim of this work is to evaluate swine medical evolution and analyze the economic effect in the treatment of diarrhea in piglets, using *Carbo vegetabilis* at 30 CH and Belacol 100.

MATERIALS AND METHODS

This research was conducted at the Swine Farm Pablo *Miguel Nápoles* in the municipality of Guáimaro, province of Camagüey, Cuba. An open, non-sequential, randomized clinical trial phase II was performed to a sample of 80 male and female pigs, 10 days old, with a starting mean weight of 2.6 kg, classifying as farm animals, which showed clinical signs comparable to diarrheic syndrome.

The experimental population was made of two groups of 40 animals each.

Group 1. It was treated with *Carbo vegetabilis* at 30 CH, 10 sublingual drops every 12 hours, until the fifth day (Cuesta *et al.*, 2007), and Ringer solution 100 a 300 ml intraperitoneally, according to the degree of dehydration during the first days.

Group 2. It was treated with Belacol 100 — 100 mg/kg weight— orally every 24 h, until the fifth day, and Ringer solution 100 a 300 ml intraperitoneally, according to the degree of dehydration, during the first three days.

The following categories were evaluated following the criteria for diagnostic:

Asymptomatic
- Lack of diarrhea
- No dehydration
- Response to low-intensity stimuli
- Absence of abdominal pain.

Improved
- Decrease in frequency and consistency of diarrhea
- Disappearance of dehydration
- Response to low-intensity stimuli
- Absence of abdominal pain

The same
- Presence of diarrhea
- Moderate dehydration
- Lack of response to low-intensity stimuli
- Persistence of abdominal pain

Worsened
- Increase in diarrhea intensity
- Moderate-intense diarrhea
- Marked depression
- Abdominal pain
- Chills
- Stupor

The effectiveness of the therapy was evaluated according to the proportion of animals recovered on the third and fifth day of treatment through Chi-square, with a significance of $P < 0.05$. It was considered effective when the animal remained asymptomatic on the fifth day of treatment; it was ineffective if it remained the same, worsened or died in the same period.

Animal weight was analyzed at weaning. Appetite and dehydration were evaluated on the first, third and fifth day, through Chi-square, with a significance of 5 %, using SPSS, version 15 (2006).

The data collected were printed in a chart and used as the base document along the research.

The treatment expenses were calculated as cost-benefit. This research included the duration of the treatment in days, costs per days, animal, and total cost of the treatment (Trujillo *et al.*, 2007).

For determination of the treatment costs using *Carbo vegetabilis*, it was considered that:
- 1 bottle = 120 ml
- Price of the bottle = $ 0.75
- 1 ml = 16 drops

Ten drops were applied, twice a day, until the fifth day.
- Cost per ml = price of bottle / volume of bottle in ml.
- Cost of treatment per day = cost of ml x total ml used in the day.
- Ml used in the day = *number* of animals in the group x 10 drops per animal.
- Value of pigs within the farming category = $ 6.25
- Monthly salary of a veterinarian technician = $ 260.00
- Salary per minute = $ 0.02
- Working time: 1.5 minutes per piglet.

Treatment with Belacol 100
- Cost of ml in Cuban Peso (CUP) = $ 19.60 / 1 000 = $ 0.02
- A pig receives 260 mg/day = 0.26 ml
- Used ml = amount of pigs treated x 0.26 ml
- Treatment cost = total of ml used x 0.02
- Cost of the treatment in Cuban Convertible (CUC) = total used ml x 0.01

Statistical processing was made using the variance analysis for a factor (treatment) and its effects on the final model weight of animals, with a significance of 5 %, SPSS, version 15 (2006).

Model for variance analysis

$Y_{ij} = \mu + Ti + e_{ij}$

Where,

Y_{ij}: is the dependent variable for weight at weaning, j-ésimo an individual with a final weight in i-ésimo treatment.

μ: general constant.

T_i: fixed effect of i-ésimo treatment.

e_{ij}: effect of random error.

For data recollection a survey was made following expert criteria, containing qualitative and quantitative variables in the study. It was used during the process.

RESULTS AND DISCUSSION

Tables 1 y 2 show the clinical evolution of animals treated with *Carbo vegetabilis* at 30 CH and Belacol 100, where group I (97.5 %) animals on the fifth day of treatment were observed to have faster recovery than those in group II, where mortality was higher (7.5 %).

The results show that the therapy with *Carbo vegetabilis* at 30 CH in this kind of diarrhea in swine is effective, though no significant differences were observed with respect to Belacol 100.

Most deaths were caused by an aggravation of the symptoms, so observations and care should be constantly kept, in order to diagnose diarrhea and prevent the causes (García and Cabrera, 2009).

These results are similar to those achieved by Jacobs and Jimenez (2000) in Nepal and Nicaragua, when diarrhea intensity and duration declined when the right homeopathic medications were administered.

Similarly, Belon (2004) reported 90 % of recovery of animals on the third day of the homeopathic treatment to 100 animals infected with diarrhea.

Furthermore, Varona *et al.* (2005) used *Arsenicum album* at 30 CH, and were able to achieve 86.7 % recovery in the treated animals; Pérez *et al*. (2006) accomplished 73.3 % recovery in animals which were administered *Arsenicum album at* 6 CH; Ribalta *et al.* (2008) when applying *Veratrum album* and *Mercurius solubilis* achieved 90 % recovery; Hernández *et al.* (2012) have also published the efficacy of homeopathic medication to treat diarrhea syndrome in swine.

Tables 3 y 4 show the behavior of animals treated with *Carbo vegetabilis* at 30 CH and Belacol 100. In terms of appetite recovery, a significant difference ($P < 0.05$) was observed, only on the first day of treatment in group II. However, from the third day on no differences were observed between the two groups.

Ribalta *et al*. (2008) and Hernández *et al.* (2012) corroborated that the animals with digested disorders recover their appetite when treated with homeopathic medication, because they act on the organism, stimulation defensive reactions in the immune system and on nervous regulation.

Tables 5 and 6 show similar recovery to animals treated on the third day of treatment, for both groups, without significant differences, which is kept to the fifth day.

Dehydration could have been caused by excessive loss of liquids (not restituted); insufficient consumption or a combination of both, which occur under certain conditions, as in the digestive ways due to diarrhea (Cuesta *et al.*, 2007). Vidal *et al.* (2010) worked on swine prior to fattening, affected by diarrhea with blood, and they demonstrated the effectiveness of *Phosphorus* at 30 CH.

García and Cabrera (2009) refer that dehydration (excessive loss of water in the tissues) and acidosis (decrease in the alkaline reserves of blood) are common at the beginning of diarrhea if it is not treated in time, causing death in suckling pigs.

Tables 7 and 8 show the results of mean weight at weaning: 7.4 and 7.3 kg, for groups I and II, respectively, with a significant high difference ($P < 0.001$) between the two groups. The best results were observed in those treated with *Carbo vegetabilis* at 30 CH.

The results at weaning match those by Alonso *et al.* (2004), demonstrating that the treatment with homeopathic medication does not interfere with significant development in the animals.

Pérez *et al.* (2006) outlined that all animals treated homeopathically show better feed conversion, as medication act on a dynamic level, where particular patient factors exert influence, and the results depend on animal tolerance to medication.

Table 9 shows the cost analysis where expenses were calculated and cost-benefit of the two treatments was calculated, considering the duration in days, costs per days, costs per animal and overall cost of the treatment (Trujillo *et al.*,2007). Treatment with C*arbo vegetabilis* at 30 CH proved to be more economical and efficient, causing no adverse side effects (Ribalta *et al.*, 2008) and *(*Hernández *et al.,* 2012), who applied homeopathic treatments to fight diarrheal syndrome in swine.

CONCLUSIONS

Carbo vegetabilis at 30 CH was effective in the treatment of diarrhea and improvement of the general health state in swine, and also proved to be a more economical treatment than the conventional one.

REFERENCES

ALONSO, R.; COMA, J. y RODRÍGUEZ, J. (2004). *El cerdo.* La Habana, Cuba: Editorial Félix Varela.

BELON, P. (2004). *Ensayos Clínicos*. Extraído el 16 de mayo de 2010, desde http://www.homeopathy.boiron.com

BLOOD, A.; RADOSTITS, J.; MENDENSON, O.; ARUNDEL, I. y GAY, R. (1988). *Medicina Veterinaria* (sexta ed.). México D.F: Nueva Editorial Interamericana.

BRIONES, F. (2008). *La Homeopatía en Medicina Veterinaria.* Extraído el 16 de mayo de 2010, desde http://www.weim.net/homeovet/dsp/intro2.htm.direccion.

CABRERA, Y. (2009). Trastornos gastrointestinales en el Cerdo. *Boletín técnico porcino*, (11), 4.

CUESTA, M. MONTEJO, E. y DUVERGEL, J. (2007). Homeopatía Veterinaria. En *Medicina Interna Veterinaria* (Tomo II). La Habana, Cuba: Editorial Félix Varela.

GARCÍA, A. y CABRERA, Y. (2009). Incidencia de los trastornos gastro-intestinales en la mortalidad en el sector especializado del grupor en el año 2008. *Boletín técnico porcino*, (11), 11.

HERNÁNDEZ, A.; VIDAL, F. y PEÑA, I. (2012). *Efectividad de la terapia homeopática sobre los trastornos digestivos en el cerdo Criollo*. V Seminario Internacional Porcicultura tropical 2012. Habana, Cuba.

JACOBS, J. y JIMÉNEZ, M. (2000). *Homeopathy Treatment of Acute Childhood diarrea.* Extraído el 16 de mayo de 2010, desde http://www.homeopathy.boiron.com.

KENT, J. (2004). *Materia Médica Homeopática*. Ciudad México, México: Editorial Porrúa.

MINISTERIO DE AGRICULTURA DE EEUU (2010). *Consumo mundial de carne*. Asamblea General de Marché du Porc Breton. Extraído el 13 de junio de 2010, desde http://www.3tres3.com/buscando/ficha.php?id=2970.

PÉREZ, Y.; VIDAL, F. y PEÑA, I. (2006). Tratamiento del síndrome diarreico en crías porcinas utilizando medicamentos homeopáticos. *Redvet*, *7*, (2). Extraído el 16 de mayo de 2010, desde http://www.veterinaria.org/revistas/redvet.

RIBALTA, Y.; VIDAL, F.; PEÑA, I. y LEANDRO, R. (2008). *Eficacia del* Veratrum album, Mercurius solubilis *y moxibustión en el tratamiento del síndrome diarreico en crías porcinas.* Ponencia presentada en evento Porcinocultura Tropical, La Habana, Cuba.

SPSS (2006). SPSS for Windows (v. 11.5. 1). Extraído el 16 de mayo de 2010, desde http://www.spss.com.

TRUJILLO, C.; CUESTA, E. y DÍAZ, I. (2007). Los costos. Clasificación y determinación. En *Economía agrícola*. Editorial Hispano.

VARONA, L.; VIDAL, F. y LEANDRO, R. (2005). Eficacia del *Arsenicum album* a la 30 CH como terapia alternativa en el tratamiento del síndrome diarreico en cerdos. *Redvet*, *6* (2). Extraído el 16 de mayo de 2010, desde http://www.veterinaria.org/revistas/redvet/n-0654.html.

VIDAL, F.; PEÑA, I.; TORRES, R.; LÓPEZ, O. y LEANDRO, R. (2010). *Efectividad del* Phosphorus *a la 30 CH sobre las diarreas con sangre en precebas porcinas*. Ponencia presentada en IV Seminario Internacional Porcicultura tropical 2010, La Habana, Cuba.

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Table 1. Distribution of animals in groups I and II according to their clinical evolution on the third and fifth days of treatment.

Clinical evolution	Group I				Group II			
	3rd		5th		3rd		5th	
	No.	%	No.	%	No.	%	No.	%
Asymptomatic	25	62.5	39	97.5	20	50	37	92.5
Improved	14	35	0	0	17	42.5	0	0
Same	0	0	0	0	0	0	0	0
Worsened	1	2.5	0	0	3	7.5	0	0
Dead	0	0	1	2.5	0	0	3	7.5
Total	40	100	40	100	40	100	40	100

Source: survey

Table 2. Chi-square tests for the clinical evolution between the groups on the third and fifth days of treatment.

	Chi-square Pearson			No. Of valid cases
	Value	gl	Sig. asymptomatic (bilateral)	
Third day	1.846 (a)	2	.397	80
Fifth day	1.053 (b)	1	.305	80

Table 3. Distribution of animals in groups I and II according to appetite on the first, third and fifth days of treatment

Groups	First day				Third day				Fifth day			
	With appetite		Low appetite		With appetite		Low appetite		With appetite		Low appetite	
	N	%	N	%	N	%	N	%	N	%	N	%
I (n = 40)	15	37,5	25	62,5	25	62,5	15	37,5	39	97,5	1	2,5
II (n = 40)	25	62,5	15	37,5	20	50	20	50	37	92,5	3	7,5

Source: survey

Table 4. Chi-square test for appetite of animals in groups I and II on the first, third and fifth days of treatment, according to appetite.

	Chi-square Pearson			No. of valid cases
	Value	gl	Sig. asymptomatic (bilateral)	
First day	5.000 (b)	1	.025	80
Third day	1.270 (b)	1	.260	80
Fifth day	1.053(b)	1	.305	80

Table 5. Animal distribution in groups I and II on the first, third and fifth days of treatment, according to dehydration (Blood *et al.*, 1988)

Groups								
	First day							
	Slight		Moderate		Severe		Without dehydration	
	No.	%	No.	%	No.	%	No.	%
	15	37.5	10	25	0	0	15	37.5
	Thir day							
	Slight		Moderate		Severe		Without dehydration	
I (n = 40)	No.	%	No.	%	No.	%	No.	%
	5	12.5	1	2.5	0	0	34	85
	Fifth day							
	Slight		Moderate		Severe		Without dehydration	
	No.	%	No.	%	No.	%	No.	%
	0	0	0	0	1	2.5	39	97.5
	First day							
	Slight		Moderate		Severe		Without dehydration	
	No.	%	No.	%	No.	%	No.	%
	9	22.5	6	15	0	0	25	62.5
	Third day							
	Slight		Moderate		Severe		Without dehydration	
II (n=40)	No.	%	No.	%	No.	%	No.	%
	3	7.5	3	7.5	0	0	34	85
	Fifth day							
	Slight		Moderate		Severe		Without dehydration	
	No.	%	No.	%	No.	%	No.	%
	0	0	0	0	3	7.5	37	92.5

Source: survey

Table 6. Chi-square tests for animals in groups I and II on the first, third and fifth days of treatment, according to the degree of dehydration.

	Chi-square Pearson			No. of valid cases
	Value	gl	Sig. asympto-matic (bila-teral)	
First day	5.000(a)	2	.082	80
Third day	1.500(a)	2	.472	80
Fifth day	1.053(b)	1	.305	80

Table 7. Stratigraphy for weight at weaning by groups.

Medication	N	Mean	Typical error
Carbo vegetabilis 30 CH	40	7.450	.0218
Belacol 100	40	7.310	.0159
Total	80	7.380	.0155

Table 8. Results of the variance analysis for final weight between the two groups in the experiment.

	Sum of square	gl	Quadratic mean	F	Sig.
Inter-group	.392	1	.392	26.915	.000
Intra-group	1.136	78	.015		
Total	1.528	79			

Table 9. Results of the economic analysis

Groups	Nr of animals	Amount of medication/day/piglet	Overall medication use	Expenses in Cuban Peso (CUP)	Expenses in Cuban Convertible (CUC)	Salary Epenses	Death expenses	Overal costs
I	40	1.25 ml	250 ml	1.87	-----	4.50	6.25	12.62
II	40	260.00 mg	52 ml	0.83	1.00	3.00	18.75	22.58