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Observational study of biological and dietetic treatments for Autism Spectrum disorders

Barcelona, December de 2007

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SUMMARY

Background

In 1942 Leo Kenner described for the first time the autism and in 1943 Hans Asperger defined the diagram that has his same name. From Lorna Wing's contributions, in 1992, the term Disorders of the Autism Spectrum that, in a more extended way, includes the two former, is incorporated. It is characterized for disturbances in the social interaction and in the communication and to have patterns restricted of behaviours, of interests and of activities.

Aim

The aim of this study is to evaluate the efficiency of a biological and dietetic treatment to attenuate the autism's symptoms.

Framework Reference

This treatment it's been defined by three basic props:

The theory formulated by Shattock and Reichelt of peptide opioid excess. According to this, these peptides that result from the gluten and casein incomplete digestion, produce alterations in the neurotransmitters of the brain.

The theory of the yeast colonization in the intestine, by Dr. Shaw, that it entails, of a side a high production of neurotoxins and of the other one an increase of the intestinal permeability with the consequent intestinal dysfunction.

The theory formulated by Dr. Waring of the sulphurous components insufficient elimination by a deficiency of the phenylsulfurtransferase enzyme.

Methods

20 autism patients were enrolled in the study. The patients that have completed the study are 13, which 10 of them are males and 3 females, all of them from 3 to 13 years old. Seven patients abandoned; 4 of them after the first visit for personal motives, 2 of them abandoned because the symptoms aggravated during the drainage and the last 1 also for aggravation of the symptoms with the introduction of the supplements.

Inclusion criteria: boys and girls from 3 to 15 years old, diagnosed with Disorders of the Autism Spectrum. In all the cases the diagnostic was confirmed by the questionnaire corresponding to DSM IV.

Exclusion criteria: patients that had already been in a diet free of gluten and/or casein or that had been in a treatment against the Candidas in the last 6 months.

The study was programmed to six months and six visits were done. In the first visit, the DSM IV questionnaire and the CARS test were performed, it was requested the urine analysis to determinate the concentration of opioid peptides and organic acids, and we prescribed drainage with homeospagyria and supplement of DHA. In the second visit, according to the results of each individual urine analysis, we prescribed diet without gluten and/or without lactic and/or anti-Candida treatment. In the 3rd, 4th and 5th visits the other supplements and homeopathic and homeospagyria medicines were gradually introduced (see Table 2.5). In the 6th visit we repeated the urine analysis and the CARS tests. In each visit, it was annotated the changes observed in the behaviour and in the attitude, and also the modifications of physical symptoms.

Results

All the 13 individuals that finished the study obtained lower punctuations in the CARS test after the treatment (Time 2) that the ones obtained before starting the treatment (Time 1). The decrease in the CARS punctuations were the following:

- 8 patients lowered more than 20%,
- 2 patients lowered between 10% and 20%,
- 3 patients lowered between 0% and 10%.

The patient that had the best improvement, went from a punctuation of 45 in Time 1 to a punctuation of 29, 5 in Time 2 and went from severe autism to the below limit of the category that suggests borderline autism.

Conclusions

The improvement in the autism's symptoms after six months of treatment that the group of the study it has been globally experimenting, suggest that body detoxification diets, treatments of intestinal yeast and/or bacteria, correction of the metabolic errors using the diet and dietetic supplements, allows treat and improve autism symptoms. Then, it could be, very suitable to go deeply into the possibilities that these therapies offer to treat the autism.

Key words

Autism, Asperger, biological and dietetic treatment, opioid peptides, intestinal Candidas, arabinose.

1 INTRODUCTION

In 1943 Leo Kanner, in the U.S., identified and described for the first time, the autism. Right after, in 1944, Hans Asperger, in Austria, described the diagram that has his same name. Some years after, from Lorna Wing's contributions (1992), it's incorporated the term Disturbance of the Austim Spectrum that in a more extended way includes the two told before and reflects the large variability that exists in the expression of this disorder.

In the last years the number of cases diagnosticated has considerably increased and, maybe because the diagnostic's criteria has been enlarged and it could have been an influence, some authors admit that there is a continuous increase in the real number of cases. The autism it's present in 4 men every 1 women. Nowadays it's calculated that one every 170 born boys, suffers Disturbance of the Austim Spectrum (1).

Its characteristics are:

- Qualitative disturbance in the social interaction.
- Qualitative disturbance in communicating.
- Restrained standards in behaviour, interests and activities showing in many cases body stereotyped movements.

At present, even though the suspicion can appear sometimes at the age of 12 moths old, in the majority of cases the true diagnostic is done between the age of 30 and 36 moths old.

Framework reference

It is accepted that there are many factors that take part in the ethologic of this disorder, always over the base of a genetic component that, even though nowadays it's hasn't been possible to determine, it is thought that different chromosomes are involved. One of these factors could be a metabolic and intestinal dysfunction. Shattock (England, Sunderland University) and Reichelt (Norway) have formulated the hypothesis that the gluten's peptides and the caseine exercise an ethological function in the pathogenic of the autism disorder. It is suggested that the psychological and behaviour alterations of the autism can be explained by the opioid activity peptides mentioned before, therefore these peptides pay attention to the opioids receptors of

the brain, it affects the neurotransmission and provoke modifications on the behaviour. Excessive high levels of these opioids peptides have been measured excreted in the urine of the people with autism –Reichelt (1986) and Shattock (1990)–. Shattock and Whiteley have developed in the past years this theory (2). An enzymatic endopeptidases deficit, especially of Dipeptidil-peptidase IV (DPPIV), and it's corresponding cofactors (vitamins and minerals), would explain why the digestion of some food (in this case the casein and gluten) could have been incomplete and would cause this abnormal high quantity of peptides in the digestive tract. These peptides, after being absorbed in the intestine, would pass the blood flow: part of it would be excreted by the kidneys and another part would cross the blood-brain barrier and arrive to the brain. Once there would become biologically active in the union with the opioids receptors and would produce interferences in the transition of the cerebral information.

An increase with the permeability intestinal would determine the anomalous absorption of an important quantity of these peptides, that because of its bigness, in physiological conditions of preserving the integrity in the intestinal wall, they wouldn't have to be absorbed by the intestine. Wakefield and cols. (1998, 2000) studied a sample of 12 kids in a first work (3) and 60 kids in a second work (4), all of them diagnosticated with Disorder of the Autism Spectrum and determined by endoscope, that the 93% shower Hyperplasia Nodular Lymphoid. They concluded that this pathology could be considered as a subtle variation of the inflammatory sickness in the intestine. This intestinal alteration would explain by one side the anomalous absorption of the long-chain peptides and by other side the diminution of the vitamins and minerals absorption.

Dr.Shaw, director of the Great Plains Laboratory of Lenexa (USA), have founded very high levels of arabinose in the urine of many autism children. It suggests that this sugar would be a sub product of the Candides and those high levels in the urine would mean the existence of an intestinal Candida. This excessive growth of the yeast in the intestine would mean other interferences of the neurotransmission and it would contribute to worse the increase of the intestinal impermeabilization. It reports important improvements in the behaviours of children with autism, after doing an antifungal treatment. (5)

An expert group of the USA and Denmark have published in The Lancet magazine, a study where they report that a silence pandemic of the disorders in the neurological development exists caused by chemical toxic products sent to the environment. They

have identified 202 industrial chemical products potentially harmful to the human brain that could cause, among others, autism, attention deficit, mental delay and brain paralysis. (6)

Dr. Waring described in 1993 that 90% of autism children had the enzymatic hepatic phenylsulfur-transferase levels decreased (7). This condition would determine a bigger difficulty in removing out of the organism the sulphuric components by the hepatic metabolism.

According to this, and always from a special genetic configuration that hasn't been determined yet and which it is believed that a variety of genes that interact with each other have an intervention in it, we could consider three factors present in the etiopathogeny of the autism:

- An enzymatic deficit that could cause a metabolic disorder
- An intestinal inflammation accompanied by an increase of the intestinal permeability and dysfunction in the absorption of the nutrients.
- An accumulation of the toxins in the organism because of a malfunction in the elimination lines.

So, the people that have disorders of the Autism Spectrum would have to benefit from a treatment that would influence in these three aspects.

Objective

The objective of this study is to evaluate the efficiency of a biological and dietetic treatment, previously defined, to attenuate the autism's symptoms, in a sample of this collective. And the purpose is double:

- On one side, give the families a treatment that can benefit their children and improve their quality of life.
- On the other side, stimulate the sanitary institutions in our country and go deeply on researching about the autism treatment, following this therapeutic orientation.

2 METHOD

2.1 Sample's selection

In order to select the subjects of the sample, the following inclusion and exclusion criteria were defined:

Inclusion criteria: boys and girls from 3 to 15 years old, diagnosed as Disorder of the Autism Spectrum. In all cases, we confirmed the diagnosis using the questionnaire corresponding to the DSM IV.

Exclusion criteria: patients that had been already following free gluten and/or casein diet, or that had done a treatment against the Candidas in the past 6 months.

To get in touch with the families we asked for the collaboration of schools with special education in Barcelona and nearness, and also an association of parents with autism's children and a centre of after school therapies.

2.2 Range used

We used two ranges:

- DSM IV – R (Diagnostic manual and statistic of the mental disorders); American Psychiatric Association.
- CARS (*The Childhood Autism Rating Scale*) of Eric Schopler, Ph.D., Robert J. Reichler, M.D., and Barbara Rothen Renner, Ph.D. It is a judgement range of the childhood autism that has 15 items that help to identify the children with autism and differentiating them from other children with development problems that are not autism. It is based on comparing more than 1500 children and its corresponding clinical valuations. The maximum score that it is obtained adding the scores of 15 items is 60 points. Scoring more than 30 points it's considerate autism. We've used this range because it permits an accurate evaluation and it needs the subject's evolution and the changes that have experimented during the entire treatment. We used the same translation to Spanish that the Unit of Neuropediatric of the Sabadell's Hospital uses that belongs to the Sanitary Parc Taulí Corporation.

For the appraisal of the subjects of the study the following categories have been used: a) the punctuation among 30 and 33 suggests a light autistic disorder; b) the punctuation among 33, 5 and 36 suggests a moderate autistic disorder; and c) from punctuation 36, 5 it suggests a severe autistic disorder.

2.3 Design of the study

It is defined a duration of 6 months of treatment and 6 visits grouped in two phases - with the only goal to facilitate the elaboration of the information - are carried out.

In the cases in which the subject is following a treatment prescribed by the neurologist or another specialist, this treatment is respected without introducing any modification.

PHASE A

It consists in two visits and all patients follow the same model of treatment that has been designed.

1st VISIT; Time 1

It consists in two parts:

First part of psychological type: the questionnaire DSM IV is passed in order to verify the diagnosis of the Disorder of the Autism Spectrum and an evaluation of the symptoms of autism according to the CARS test is carried out.

Second part of medical type: the clinical story of the patient is made and the organic acids and the morphopeptides of gluten and casein in urine are asked in the Laboratory Great Plains. Prescription: drainage for 6 weeks; from the 5th week DHA (docosahexaenoic acid) is introduced.

2nd VISIT

According to the results of the analyses of urine, the patients with a high concentration of gluten started a diet without gluten, those with a high concentration of casein peptides started a diet without milk nor did derivatives and those with a high both values start a diet without gluten nor milk nor derivatives. Into the same time digestive enzymes are introduced and intestinal flora. The ones that had high levels of arabinose, after a week of eliminating the

sugar from the diet, started the antiparasitic treatment, introduced the intestinal flora and continued with the drainage until the antiparasitic treatment is finished. In this group the digestive enzymes are not introduced until the 3rd visit.

PHASE B

It consists in four visits and the introduction of the different supplements and homeopoids medicines; it's made depending on the individual answer of each patient.

3rd, 4th, 5th VISIT

They keep on working in gradually and depending on the individual answer of each patient: a multivitamin, a supplement of calcium and magnesium, oligoelements, ornitine and tryptophan and TMG (trimethylglycine) in presentation of magisterial formula, treatment of homeospagyria, and dopamine and homeopathic serotonin.

6th VISIT; Time 2

The CARS questionnaire is passed for the second time and the same analyses of urine are asked again in the Laboratory Great Plains.

2.4 Collecting information

In the first visit the following information is collected:

- Family antecedents of disorders in behaviour, intestinal disorders, alimentary allergies, infections as candid, fibromiàlgies...
- Personal Story: pregnancy, delivery, lactation, reactions to vaccines, hospital admissions, other symptoms or concomitant illnesses, intestinal habit, allergies...
- Evolution of the autism: behaviour during the first months of life, first signals of alert, existence of regression in the behaviour....

A table, for each one of the subjects of the sample, is elaborated with the items of the CARS, that had resulted altered and, in each visit, a copy is given to the families for every week until the next visit. They are asked them to note down all changes that are produced from the former visit, as well as any possible observation

with respect to other symptoms of behaviour, physicists, or other modifications in the usual medication of the subject.

2.5 Treatments and posologies

Table 1.- Relation between medicines and supplements

TREATMENT	MEDICINE OR SUPPLEMENT	POSOLOGY
DRENAGE with HOMEOSPAGYRIA	Nasulsar	3-5 years old – ½ pill.3/day + 6 years old – 1pill. 3/day
	Berbarin	3-5years old – 3drops 3/day 6-11years old – 4 drops 3/day + 12years old – 5drops 3/day
	Lynux	3-5years old – 3drops 3/day 6-11years old- 4 drops 3/day +12years old- 5 drops3/day
	Marbisán	3-5years old – 3drops 3/day 6-11years old – 4drops 3/day + 12years old – 5drops 3/day
DHA	Algatrium	50mg/kg/day
ENZIMS DIGESTIUS	Seren Aid	2 capsules 2/day(midday and night, before dinner)
Treatment Antiparasitic Of Dr. Hulda Clark	Black Walnut Clove Artemisia Absinthe Wormwood Ornitine	Following the treatment guides of Dr.Clark according to age.
FLORA INTESTINAL	Symbiolact	1 sachet /day
	Lactobacilus GG (Rhamnosus)*	1 capsule/day
MULTIVITAMÍNIC	SuperNuthera	3 ml/morning
SUPLEMENT de Ca, Mg.	InmunoComplex	1 capsule/day
OLIGOELEMENTS	lfigen; Si, Zn, Mg	5 ml./night
	lfigen; Si, Zn, Mg, B, Mn, Cr	5 ml./morning
FORMULA MAGISTRAL	TMG 175 mg, Ac.	2 capsules/morning
	Folinic 200 mg, Vit.	2 capsules/night

TREATMENT	MEDICINE OR SUPPLEMENT	POSOLOGY
	B ₁₂ 6 mg, Ornitine 150 mg Tryptophan 150 mg	1 capsule/night
	Vit B ₁ 3m g, Vit B ₂ 3 mg, Vit B ₃ 5 mg, Vit B ₆ 6 mg, Vit B ₁₂ 6 mg.	
HOMEOSPAGYRIA	Lidospag	3-5years old – 3drops 2/day 6-11years old – 4 drops 2/day + 12years old – 5drops 2/day
	Regespag	3-5years old – 3drops 2/day 6-11years old – 4 drops 2/day + 12years old – 5drops 2/day
	Modispag	3-5years old– 3drops 2/day 6-11years old – 4 drops 2/day + 12years old – 5drops 2/day
	Calfosar	3-5 years old – ½ pills 2/day + 6 years old -1 pills 2/day
	Sulkasar	3-5 years old – ½ pills 2/day + 6 years old -1 pills 2/day
HOMEOPATIA	Serotoninum Muriatium 5 CH Dopamine 5 CH	2 granuls/nit 2 granuls/mati

* It has only been administrated to one subject that showed high values of HPPHA (acid 3-(3-hidroxifenil)-3 hidroxypropionic) in urine, indicate the presence of clostridia.

3 RESULTS

3.1 Description of the sample

3.1 Description of the sample

We've selected 20 subjects that had already made the first visit and the initial analyses.

The distribution by sexes it's been: 16 men and 4 women.

Two of them are schooled in ordinary school with support, and 18 in school with special education. The subjects came from 9 different special education schools and 2 from ordinary schools.

From the second visit, we had 7 that left because of the following reasons:

- 4 of them because of family issues: familiar problems, difficulties following the diet and treatments,...
- 2 subjects experimented an increase in nervous and aggressively during the drainage.
- 1 subject after improving with the drainage and the antifungal treatment feels more nervous and unquiet when starting to take vitamins and other supplements.

Due to the interest that has for itself the entire datum concerning the set of the initial sample of the 20 subjects, it has been kept all the aspects of the clinical history the information regarding the 20 subjects and its called **initial sample**. The 13 subjects group that followed the treatment until the end it is called **effective sample**. So, from now on the initial sample will be the group of 20 subjects that made the first visit and whom we have results of the first analysis and the effective sample are the 13 subjects that followed the treatment until the end and whom we have also the second analysis and the second evaluation of the CARS test.

3.1.1 Distribution of the second sample according to sex and age

The distribution according to age it is collected in the next table.

Table 2.- Distribution of the initial sample and the effective according to the subject's age

AGE (years)	3	4	5	6	7	8	9	10	11	12	13	T.
Initial sample	1	1	0	3	1	2	4	3	1	2	2	20
Effective sample	1	1	0	3	0	1	3	1	1	0	2	13

The distribution by sexes is in the initial sample: 16 of masculine sex and 4 of feminine sex in the effective sample: 10 of masculine sex and 3 of the feminine sex.

3.1.2 Other associated pathologies

Table 3.- Relation of associated pathologies in the initial and effective sample

Pathology	Initial sample (cases)	Effective sample (cases)
Epilepsy subclinical	3	2
Down's Syndrome	1	1
Panhypopituitarism	1	1
Dysfunction of the suprarenal glandules	1	1
Malformation renal asymptomatic and betathalassemia	1	1

3.1.3 Family antecedents

In 7 of 20 cases we've considered the existence of familiar antecedents that could be relevant.

Table 4.- Relation of familiar antecedents of the initial an effective sample

Familiar antecedents	Initial sample (cases)	Effective sample (cases)
Fibromyalgia (*)	3	3
TEA (**)(Disorders of the Autism Spectrum)	3	2
Brothers with worse pathologies(***)	2	2

Parkinson: grandfather	1	1
Down's Syndrome: father's aunt	1	1
2 abortions before of the mother	1	1
Mother chronic vaginal Candidiasis	1	1

(*) In one case the aunt, in other case the grandmother and in other the aunt and the grandmother. (**) One case the mother's cousin, one case the uncle and one case the grandfather. (***) One case of congenital cardiopathy and one case of death after 48h of being born.

3.1.4 Personal antecedents

PREGNANCY

We've registered the following incidents regarding the pregnancy that affected 10 cases of all 20.

Table 5.- Relation of incidents during the pregnancy

Incidence	Initial sample (cases)	Effective sample (cases)
FIV (fecundation in vitro)	1	0
Donors embryos	1	1
Very stressful fright	1	1
Stress, depression and hard flu + antibiotic therapy	1	1
Urinary infection + antibiotic therapy and vaginal pruritus during pregnancy	1	1
Pielonephritis + antibiotic therapy 8th month	1	0
Metrorrhagia and rest on the 1 st , 2nd and 3rd trimesters	1	1
Albuminuria 6th month	1	1
Fainting with conscience lost at 8th month	1	1
Diabetes Mellitus in pregnancy	1	1

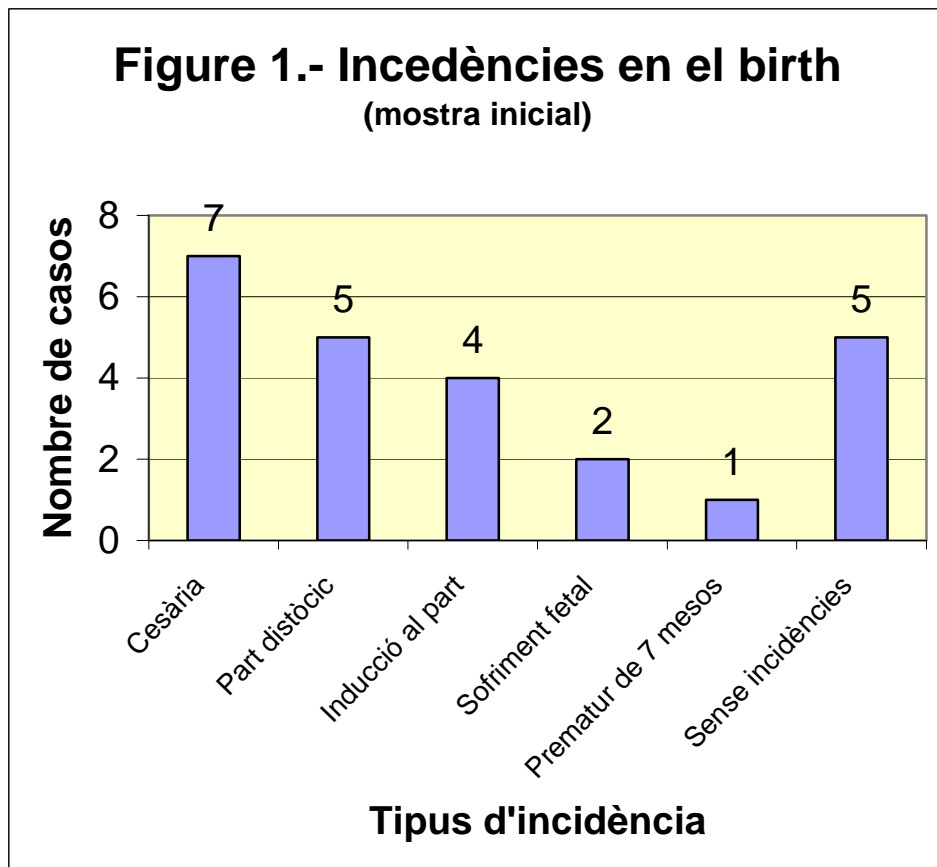
PART

In 15 of 20 cases there's been one of the following incidences

Table 6.- Relation of incidents during the delivery

Incidence	Initial sample cases	Effective sample cases
Caesarea	7	3
Distocic birth	5	4
Birth induction	4	3
Foetal suffering	2	1
Preterm at 7 months	1	1

Neonatal infection	1	1
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REACTION TO THE VACCINES

In 7 of 20 cases there was some kind of post vaccines reaction.

The vaccines used were:

Table 7.- Relation of reactions to the vaccines in the initial and effective sample

Vaccine	Initial sample cases	Effective sample cases
Triple Viral	4	3
DTP Polio (diphtheria tetanus poliomyelitis)	2	1
Prevenar	1	1

The reactions that happened were:

- Edema of inferior limb (no local edema). Effective sample
- Fever + hypoglycaemia. Effective sample

- Adenophlegmon laterocervical with surgical drainage. Effective sample
- Edema local + fever + otitis. Effective sample
- Fever + vomit. Initial sample
- Regression of development and increase of the autism symptoms. Initial sample.

REGRETIIONS IN BEHAVIOUR

In 9 cases of 20 it was produced a regression on the behaviours in the development of the child, as it is collected by ages in the following table.

Table 8.- Relation of regressions of the behaviour in the initial and effective sample

Age	Initial sample (cases)	Effective sample (cases)
13 months	1	1
15 months	2	1
18 months	2	2
24 months	3	1
30 months	1	1

3.2 Results of the first urine analysis. Time 1

3.2.1 Initial sample

The results of the analysis of 20 subjects that started the study are represented in the table and following scheme.

Graphic 2.- Description of the initial sample according to the results obtained in arabinose, gluteomorphine and caseomorphine -20 subjects-

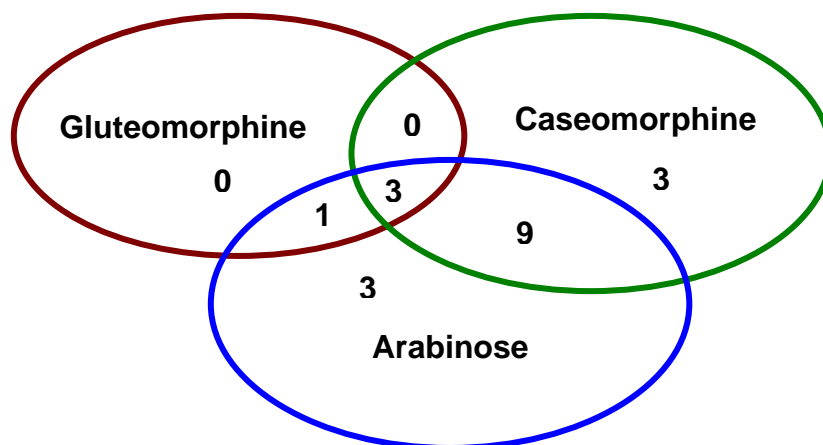


Table 9.- Description of the initial sample according to the results obtained in arabinose, gluteomorphine and caseomorphine.

Variable	Total	Gluteo- morphine	Caseo- morphine	Arabi- nose	All three
Gluteomorphine (gluten)	4	0	0	1	3
Caseomorphine (milk)	15	0	3	9	3
Arabinose	16	1	9	3	3

One subject scored negative in all three parameters.
Three subjects scored positive in all three parameters.

3.2.2 Effective sample

The results of the 13 subjects that finished the study are present in the following scheme and table:

**Graphic 3.- Description of the effective sample according to the results obtained in arabinose, gluteomorphine and case morphine -13 subjects-
Time 1**

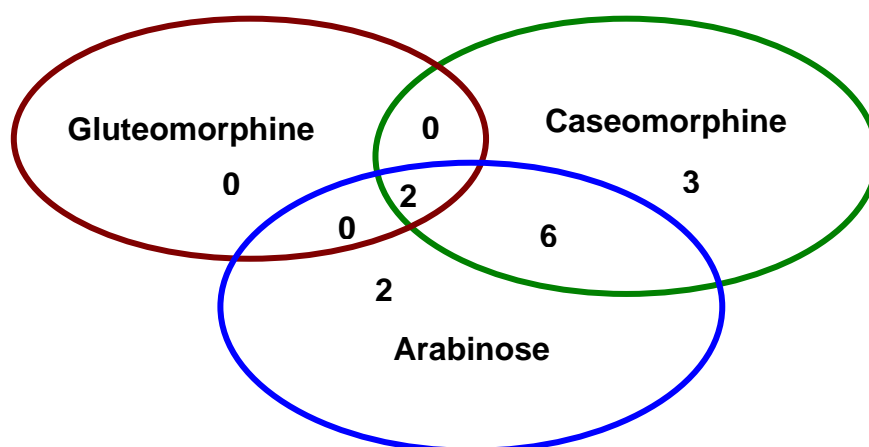


Table 10.- Description of the effective sample according to the results obtained in arabinose, gluteomorphine and case morphine. Time 1

Variable	Total	Gluteomorphine	Caseomorphine	Arabinosa	All three
Gluteomorphine(gluten)	2	0	0	0	2
Caseomorphine (milk)	11	0	3	6	2
Arabinose	10	0	6	2	2

Two subjects scored positive in all three parameters. All of them scored positive in one parameter at least.

3.3 Clinical evolution

3.3.1 Phase 1

This part and the next refer exclusively to the effective sample, meaning the 13 subjects that have finished the study. The improvement of the symptoms, in all subjects, are produced more clearly in FASE 1, 2 and 3 visits, meaning after the drainage and the introduction of the DHA, the dietetic correction and the antiparasite treatment. The sum up of the improvements in the two first visits is the following:

- After the drainage with homeospagyria:

Table 11.- Relation of the improvement level of the effective sample subjects after the drainage with homeospagyria

Improvement level	Cases
Substantially improvement	5
Moderately improvement	5
Without improvement	3

- When introducing the DHA, one of the 3 subjects that doesn't improve with the drainage, improves substantially.
- Evolution with the antiparasite treatment:
 - ✓ It is followed by 10 subjects, of which 9 improve and 1 doesn't.

- ✓ Out of the 9 that improve, two of them show an important worse, described as “reaction of Herxheimer” during the treatment.

3.3.2 Phase 2

The evolution of the subjects of the effective sample the 2nd fase of the study, visits 4, 5 and 6 it's not the same. We've evaluated in 3 levels the evolution of the 13 subjects as it is collected in the next table.

Table 12.- Relation of the improvement level of the subjects in the effective sample after the second fase

Improvement level	Cases
The improvement in the 1st phase it's kept with some punctual and reversive worsenment.	3
An improvement tendency it is kept	3
A better line it is registered	6

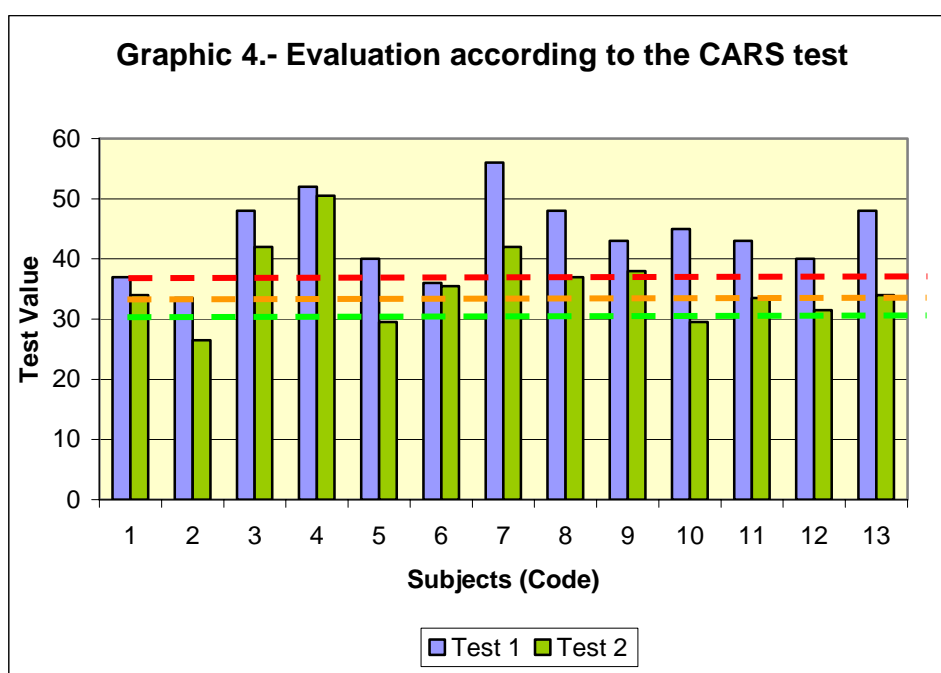
We have to remark that one case of leaving, out of the 8 that there's been and that are not counted in the effective sample, it is produced by a worsenment in this second phase.

3.3.3 Another concomitant aspects to remark

- The depositions normalize in all the subjects that presented disorder in this field.
- In all three cases there is an important size increase.
- Two subjects start to accept a bigger variety in the food.
- One subject, after the anticandidiasi treatment, gets intro the adolescent, leaves the children's games and starts a relationship.
- In one case a spring allergy disappears.
- In one case an inguinal mycosis in a foot disappears, after the drainage.
- In one case a possible celiac disease is manifested and diagnosticated.

3.3.4 Evaluation of the results according to the CARS test

The efficiency of the treatment has been measured comparing the punctuations of all subjects of the effective sample in the CARS scale in time 1 (before beginning the treatment) and in time 2 (after finishing the treatment). These punctuations are represented in the following graphic:



The discontinuous horizontal lines indicate the three categories of the autism: light, moderate and grave.

- 3 cases jump two frames.
- 4 cases jump one frame.
- 6 cases improve but don't change the frame.

Table 13.- Punctuations of the subjects in the effective sample of the effective CARS in time 1 and time 2

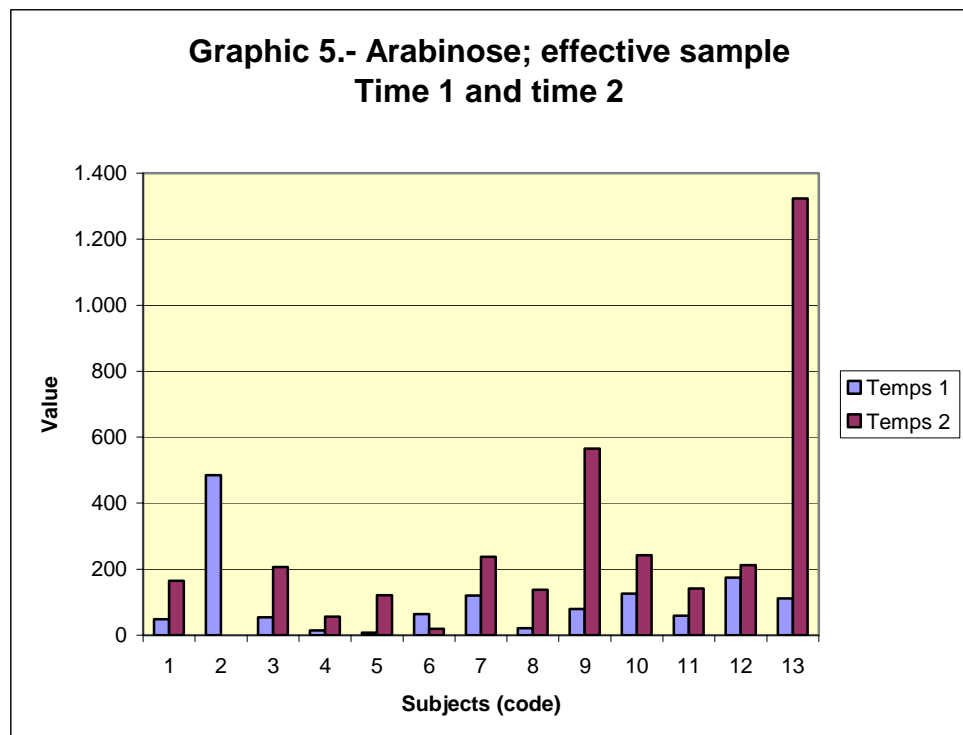
Code	1	2	3	4	5	6
CARS T1	37	33,5	48	52	40	36
CARS T2	34	26,5	42	50,5	29,5	35,5

Code	7	8	9	10	11	12	13
CARS T1	56	48	43	45	43	40	48
CARS T2	42	37	38	29,5	33,5	31,5	34

3.3.5 Evolution of the arabinose value in urine

The arabinose values that are described refer to N=12 since one subject did not participate in the second urine analysis.

- The arabinose value in urine has increased in all the subjects of the sample except in case 6, in which it has decreased under the reference limit. The case 6 is the one that has improved less according to the evaluation of the CARS test.
- Cases 4, 5 and 8, that have not arabinose level above the reference value in time 1, shown elevated values in time 2. Case 4 has bravely improved and cases 5 and 8 have substantially improved according to the CARS.
- The three cases in which the arabinose has gone higher are:
 - ✓ Cases 7 and 13, that improved in evaluation of the CARS.
 - ✓ Case 9, that obtained a medium improvement in the CARS evaluation and shown associated the Down's Disease.



3.3.6 Evolution of the morphopeptids values in urine

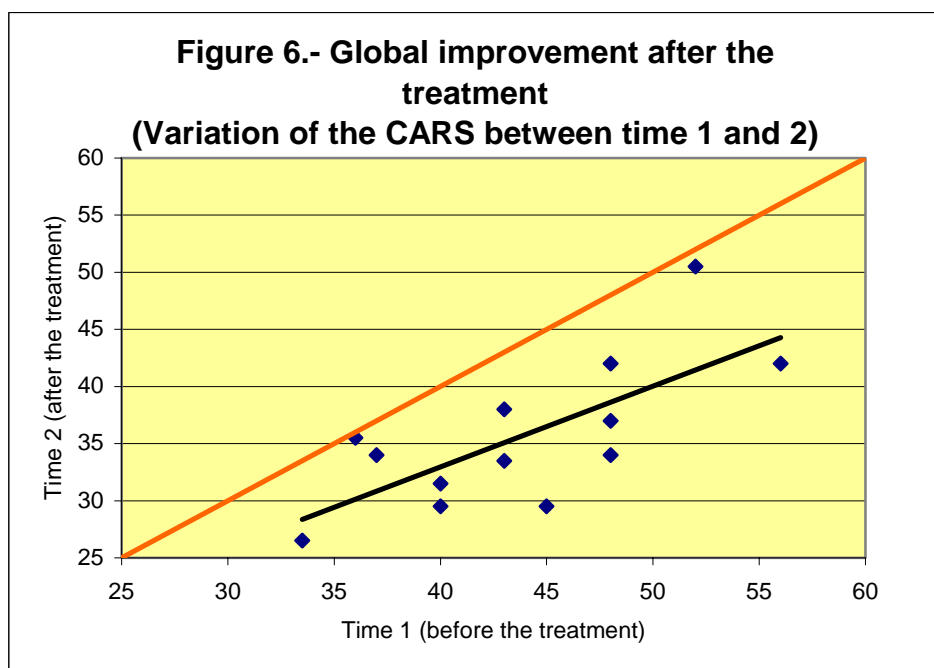
Between time 1, first urine analysis, and time 2, second urine analysis, the Great Plains Laboratory has changed the reference value of the morphopeptids, which won't let us compare, and for the following, we don't show them in a graphic. The evolution¹ is as follows:

- Gluteomorphine. It normalizes in the three cases in which the values obtained are above the value of reference in time 1. These are cases 6,8 and 11.
- Caseomorphine:
 - ✓ It's normalized in cases 3, 4, 9, 11 and 13.
 - ✓ It keeps elevated in cases 5, 6, 7, 8, 10 and 12.
 - ✓ In the 13 cases resulted normal in time 1 and appeared elevated in time 2.

¹ As in the arabinose analysis, the values that are described of morphopeptides in the urine is for N=12.

4 DISCUSSION

The evaluation, through the CARS test, of the decrease of the autistic features of the whole sample that followed the treatment during six months, is significant and shows the convenience of following these treatments in order to situate the autistic children in a more receptive attitude to the environment, and so, with more possibilities of progress through all the educative therapies that are being published nowadays and that have demonstrated efficiency in this kind of disorders.



The analysis of all the results obtained in the study lets us concrete in the following points.

- The improvement obtained in the major part of the sample after doing the drainage with homeospagyria give support to the Dr.Waring hypothesis about the deficiency of the toxin's elimination vials out of the organism, as one of the causes that contribute to the manifest of the disorders of the Autism Spectrum.
- As the same way, the behaviour improvements that have experimented the subjects when it has been eliminated out of the diet the gluten and/or milk, according to the high levels of the morphopeptids of the gluten and/or casein that

were registered in the urine analysis, give support to the theory of the opiacis peptides of doctors Shattock and Reichelt, according to this the peptides left out of the incomplete digestion of gluten and casein, absorbed by the intestinal mucosa and transported by the blood vials to the brain, provoke there alterations in the neurological transmission, and as a consequence, disorders in the behaviour.

- The improvements that have experimented after doing the treatment against the Candidiasis, for the majority of the subjects that have followed it, are on the line to confirm the theory of Dr. Shaw, regarding that a big number of children with autism have Candidiasis intestinal and that this excessive colonization of Candidas provoke a high level of toxins with neurological effects and worsenment of the intestinal disorders.
- The fact that some subjects of the sample have experimented significant improvements in the phase of supplementing dietetic supplements, as well as a substantial improvement that one subject experimented taking DHA, confirms that, at least one part of autism children, could have a deficit of these nutrients that also would contribute to worse its autistic disorder.
- The relation between the evolution that has followed the arabinose in the urine and the improvements measured with the CARS, it is not was we had expected, according to the theory of Dr. Shaw. In subjects that have experimented relevant improvements in the behaviour, the arabinose in the urine has gone higher; while the subjects that have experimented smaller improvements in the behaviour, the arabinose in the urine has maintained the same or has gone a little higher. Although this sample it's small, and so, it is convenient to study the behaviour of the arabinose in a bigger sample, these results make you think that probably there could be another factor, different from the Candidas colonization that insides in the arabinose production and increases its levels in urine while the treatment it's being done.
- The peptide's levels in gluten have normalized in all subjects of the sample that have followed a diet without gluten. The peptides of the casein didn't have the same behaviour because 11 subjects that followed the diet without lactose, only in 5 cases it has normalized, while in the 6 left it kept high in the second analysis and even it appear a new one with the level above the reference level

that was inside the normal value in time 1. They are too many cases as for thinking it was because of leaving the diet without lactic and so the possibility that it could be another interference that could explain this increase of the peptides in the casein it's still open.

- The evolution that the subjects followed constitute that the sample it's been unequal as for the global improvements obtained as an answer to every part of the different parts of the treatment. Of this, because, it needs an individual treatment and adapted to every case in particular.

The conclusion is that the biologic and dietetic treatment proposed, that has been followed during six months, has showed efficient to treat the autistic symptoms.

The whole of all these results help the theory that we are in front of a change in the paradigm concept of the disorders of the Autism Spectrum. Classically the autism was considered a neurological disorders that origins and shows in the brains and so it is only susceptible of treatments that effect in a brain level. Nowadays we can see that it's possible to treat and improve its symptoms from the detoxification treatments of the organism, of treating the intestinal colonisations of yeast and/or other bacteria, to correct by the diet and the supplement metabolic mistakes and improve the digestive function as possible.

Barcelona, December 2007

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THANKS

To the people and associations that have participated in this study:

To the people with Autism Spectrum and their families.

The schools ASPASIM (Barcelona), Can Barriga (Badalona), Carrilet (Barcelona), Escola Llevant (Badalona), Nen Deu - Institut Ortopedagògic (Barcelona) , Paideia, (Barcelona), Pedralbes (Barcelona) and Can Vila (Mollet del Vallès). To the Associació ASTRADE and the Centre Educa'm from Barcelona.

To Mr. Ferran Torres. Director of the Laboratori de Bioestadística and Epidemiologia (Universitat Autònoma de Barcelona); Servei de Farmacologia Clínica, IDIBAPS, (Hospital Clínic), Barcelona.

To Dr. Climent Giné Giné. Degà de la Facultat de Psicologia, Ciències de l'Educació i l'Esport de la Universitat Ramon Llull.

To the following laboratories and section of dietetic products:

- Brudy Technology, S.L. Barcelona.
- Cenaverde. Kerkrade, Holanda.
- Laboratorio Cobas. Madrid / Institut für Mikroökologie. Verlag, Heidelberg.
- Farmàcia Barrachina. Tavernes de la Valldigna, València.
- Heliosar Spagyrica. Madrid.
- Ifigen. Barcelona / Oligopharm S.A. Cugy. Genève.
- In Terra Salud S.L. Vilanova i la Geltrú.
- Laboratorios Boiron. Barcelona.
- The Great Plains Laboratory, Inc. Lenexa, KS
- Valentia Biologics. València.

To the transport company Fedex.

Falta entitats **que han finançat l'estudi**

Direction and medical control: Dra. Anna Vallès i Runge; metge i psicòleg.
Psychological valuation: Dra.Montserrat Pérez Pàmies; metge i psicòleg.
Secretariat, data processor and edition: **Secretaria tècnica**: APPS

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