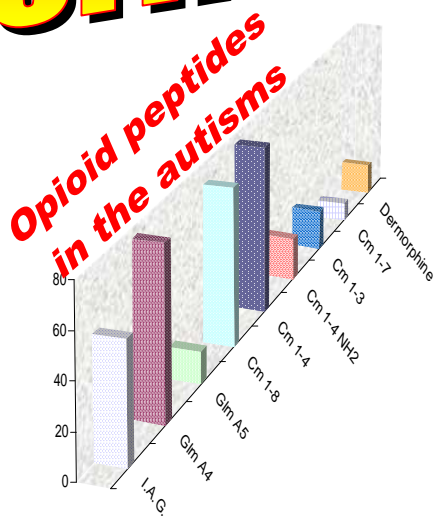


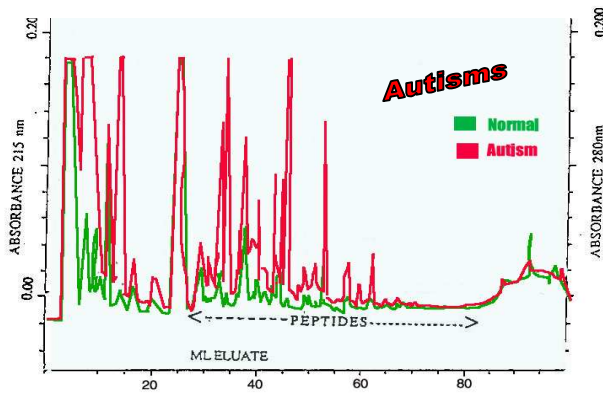
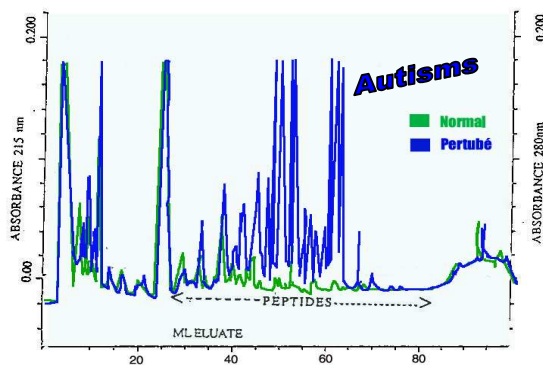
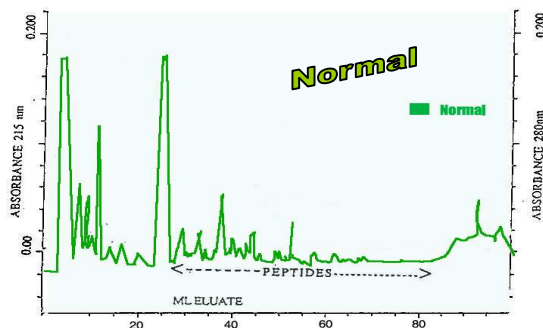
Urinary

Peptides



Average & Frequency rates - μm^2 - of urinary peptides in 84 autisms (Reichelt).

	average rate	frequency
I.A.G.	52	97%
Gln A4	75	67%
Gln A5	14	31%
Cm 1-8	70	86%
Cm 1-4	75	66%
Cm 1-4 NH2	19	28%
Cm 1-3	18	27%
Cm 1-7	8	24%
Dermorphin	14	25%

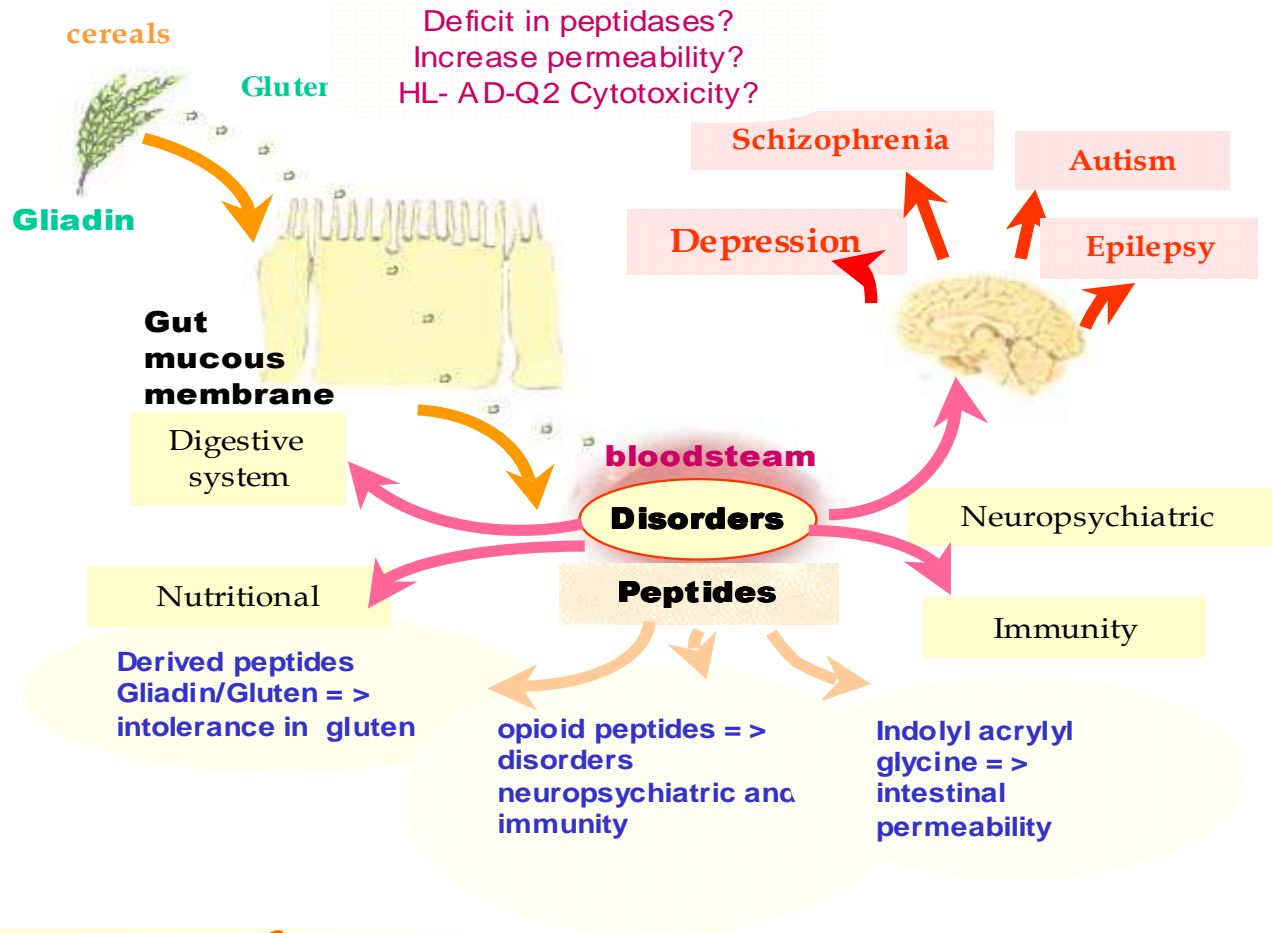


Heterogeneity of peptiduria in autism related to the diversity of the deficit in peptidases.



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GLUTEN & MORBIDITY



Exorphins

Do opioid peptides resulting from the incomplete breakdown of the gluten in gut spread out in circulation and act on target tissues, brain, and immune system?

The identities of these endogenous opioide peptides was confirmed by

- Co-chromatography with known synthesis molecules
- Amino acid analysis after hydrolysis
- measure the affinity with the opioid receptors.
- immunoassay

Opioids & CNS

- Inhibit the maturation of the central nervous system especially with children
- disturb the development of associated morphogenetic.
- Support antisocial and emotional detachment.
- Reduce the anxiety of chicks, puppies and kittens from the separation of their mother,
- disturb learning capacities

Celiac Disease

The interaction of peptidase deficit and the susceptibility HLA-DQ-2 antigen, make an immuno-inflammatory damage of the gut mucous membrane, celiac disease, neuropsychiatric disease :depression, autistic features, epilepsy, EEG disturbances at the time of the reintroductions of the gluten

-High Peptiduria and casomorphin in the urines

-IgA & G anti gliadin and endomycium (transglutaminase)

-- HLA-DQ2

Pathogenic Hypothesis

a new example of the interaction gene-environment¹
the meeting of **gluten-gliadin peptides rich in opioids** that appeared in our diet 10 000 years ago and a **genetic deficit in peptidases**.

Schizophrenia

" No grain, No schizophrenia"
Dohan 1980

Very strong positive correlation $R = 0.96$ between the gluten consumption and incidence of schizophrenia.

- Morbidity identical of the migrants in the countries to strong gluten consumption
- Peptiduria increased in 85 % of the patients
- Casomorphin 1-8 in 90% of the subjects.

Autism

Peptiduria increased in 90% of the subjects. Heterogeneity of the opioid peptides profiles answering the diversity of the deficits in peptidases.

Peptides HK1 & HK2 associated with the syndrome of hyperactive children (ADHD) and P1 & P2 attached to psychotic features.

Immensity and vulnerability of the gut mucous surface

The gut mucosal surface has an enormous surface due to its villous and cryptic structure. In an adult, the total surface is close to a football field in area. Furthermore, the endothelial and other cells make up a single layers of cells.

Neuroleptics : enzymatic activator ?

Neuroleptics would exert their antipsychotic effect by activation-induction of the peptidases, lithium would activate the pyrogluaminopeptidase (half of urinary peptides are pyroglu peptides)

Urinary Peptides

Tiny intact protein absorption is physiological

The gut mucous membrane carries out a negligible absorption of proteins and « intact bioactive » peptides.

The food enzymes such as bromelain, horse radish peroxydase and xanthine oxydase were detected postprandially in human blood.

The mother's milk contains food proteins which prepare the immune system of new born with its future environment.

Gluten -free diet

- reduce peptides, improve clinic*
- more effective if started before brain maturation*
- according to Reichelt, active even in old schizophrenia.*

The serology or antibody

The witnesses of the systemic passage of gluten derivative peptides, without the diagnostic value (present at healthy subjects), are correlated neither with the gravity nor the resolution of the symptoms.

Réf:

1. Reichelt K.L., Seim.R., Food protien dérivé peptides as possible disease causing agents: Examples from schizophrenia and autism, Current Topics in Peptide & Protein Research, Vol3, 1999.
2. Donan,F.C., Neuronalpeptides and Neuronal communication, Costa E, Trabucchi (Eds), Raven Press,New york, p.535-548.
3. Knivsberg A.M., Reichelt K.L., Scahd. J. Educational Res., 39,223-236,1995.