

Oats and wheat starch in coeliac disease – acceptance and reactions by the patients

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Wheat starch and Oats

- Wheat starch
 - Industrially purified wheat starch-based gluten-free products
 - Used in UK, Nordic countries, others “all time”
 - Gold standard in Finland, generally accepted
 - Have we treated wrongly?
 - Acceptance based on evidence based medicine
- Oats
 - Dogma challenged, Janatuinen et al. N Engl J Med 1995
 - Finnish Celiac Society Scientific Advisory Board decisions based on published evidence, clinical research results
 - 1997 oats allowed for adult coeliac disease
 - 1998 oats allowed in dermatitis herpetiformis
 - 2000 oats allowed for children with coeliac disease

Acceptance by patients based on evidence based medicine

Coeliac disease

- **Environmental insult (gluten) and genetic susceptibility (DQ2 90%, DQ8 10%).**
- **Small intestinal mucosal inflammation → villous atrophy and crypt hyperplasia**
- **Gastrointestinal symptoms, malabsorption of nutrients and extraintestinal disorders**



Gluten-
containing
diet
⇌
Gluten-free
diet



Long-term gluten-free diet – recovery rates

Table 4. Earlier studies on recovery rates (%) of small-bowel mucosa in patients on a long-term gluten-free diet

	No. of patients	Country	Duration of gluten-free diet, mean (range); years	Normal mucosa (Marsh 0)	Intraepithelial lymphocytosis (Marsh I)	Mucosal damage (Marsh II–III)
Lanzini <i>et al.</i> (7)	465	Italy	1.3 (1–9)	8	65	27
Tursi <i>et al.</i> (5)	42	Italy	2	60	16	24
Bardella <i>et al.</i> (6)	114	Italy	2 (1–23)	18	20	62
Hutchinson <i>et al.</i> (8)	284	UK	3 (1–8)	39	17	44
Wahab <i>et al.</i> (4)	158	Netherlands	5	41	24	35
Ciacci <i>et al.</i> (2)	390	Italy	7 (2–22)	44	9	47
Lee <i>et al.</i> (3)	39	USA	9 (1–45)	21		79
Current study *	177	Finland	11 (2–41)	42	54	4

***Ilus T et al., Am J Gastroenterol, 2012;107:1563-9**

Gluten free means < 20 ppm

Ciclitira et al., 1984: Gliadin challenges.

10 mg: No small intestinal mucosal damage

100 mg: Minimal changes

Additional challenge with 500 mg: Injury

1000 mg: Marked abnormalities begin to appear

Catassi et al., 2007: Gluten microchallenges. The ingestion of contaminated gluten should be kept lower than 50 mg/day.

To get 50 mg/day gluten in a product having contamination of 20 ppm means eating that product 2.5 kg/day

<20 ppm products are safe for all.

(Further reading: Hischenhuber et al. Safe amounts of gluten for patients with wheat allergy or coeliac disease. Aliment Pharm Ther 2006;23:559-75. DrSchär

Long-term GFD

CD children

CD adults

DH adults

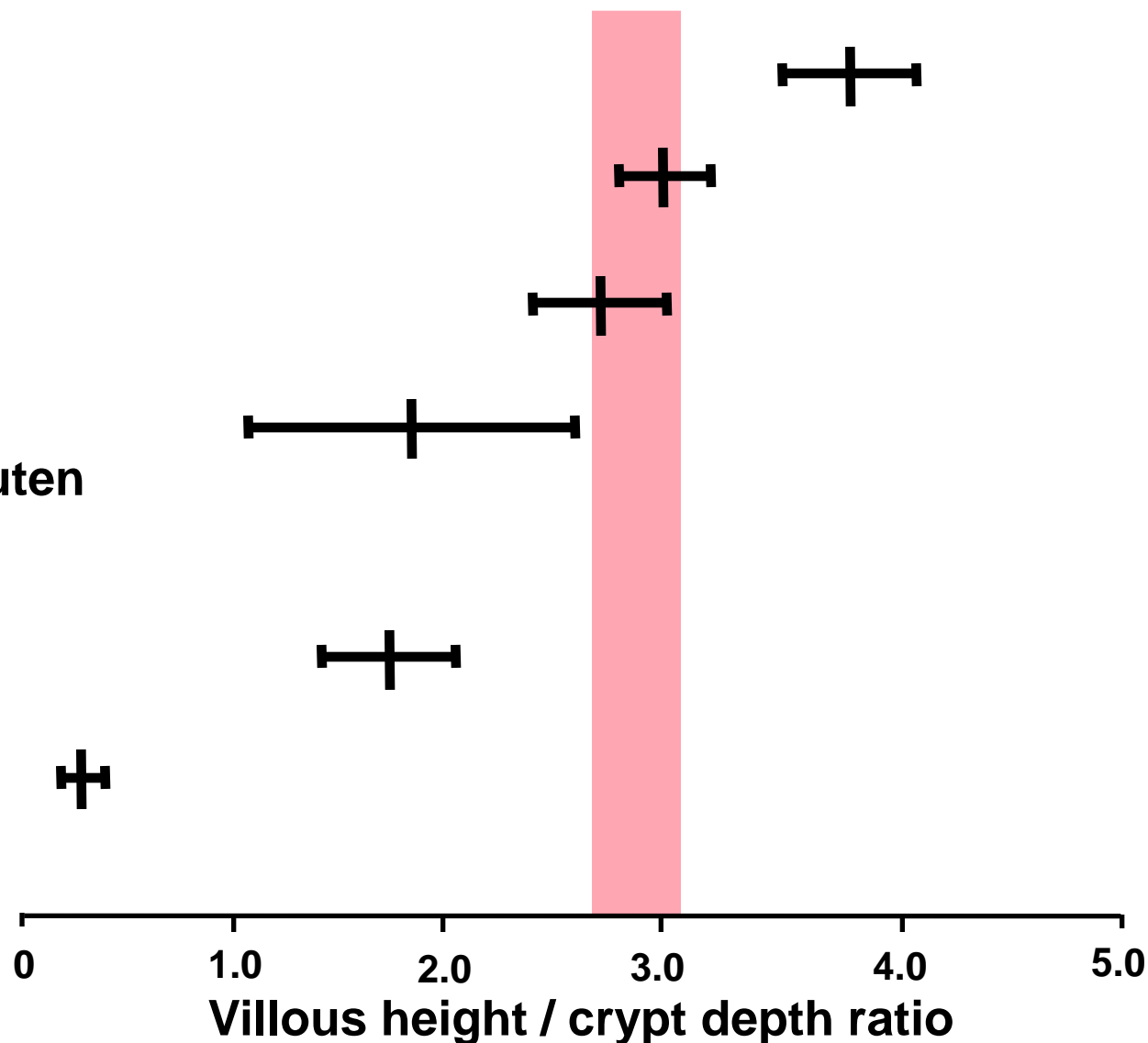
CD adults,
occasional gluten

Short-term GFD

CD adults

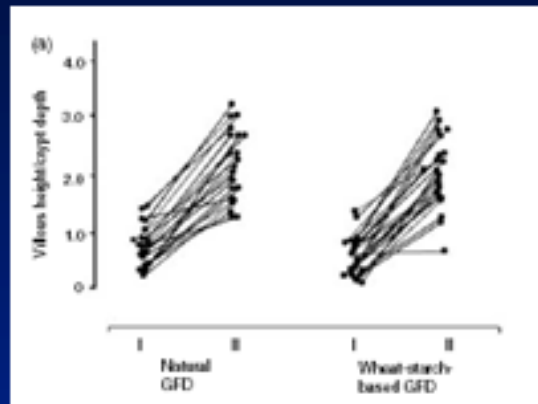
Untreated

CD adults

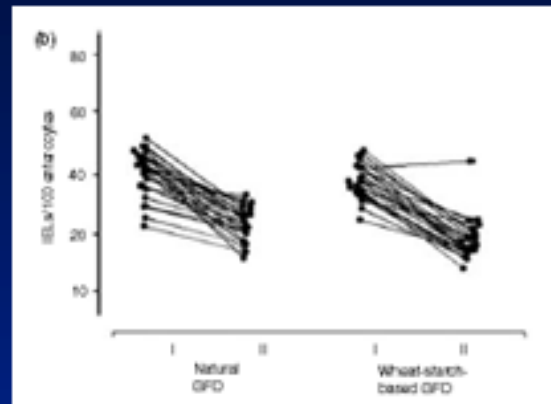


Peräaho et al.: Wheat-starch-based gluten-free flour products in the treatment of newly detected coeliac disease: prospective and randomized study. Aliment Pharmacol Ther 2003;17:587-94.

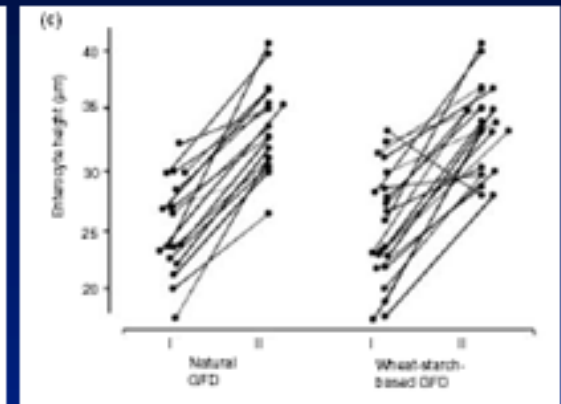
Vh/CrD



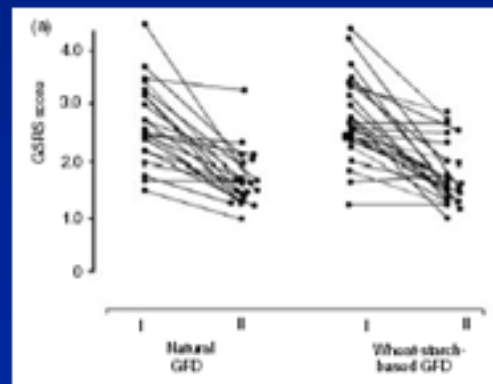
IELs/100 enterocytes



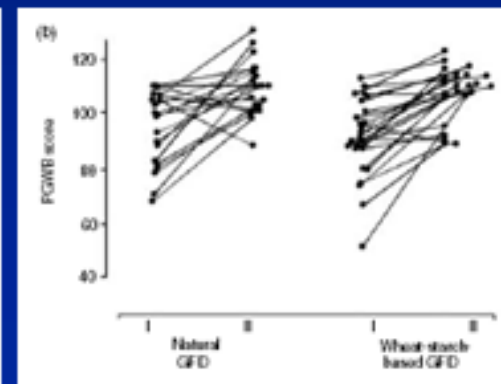
Enterocyte height



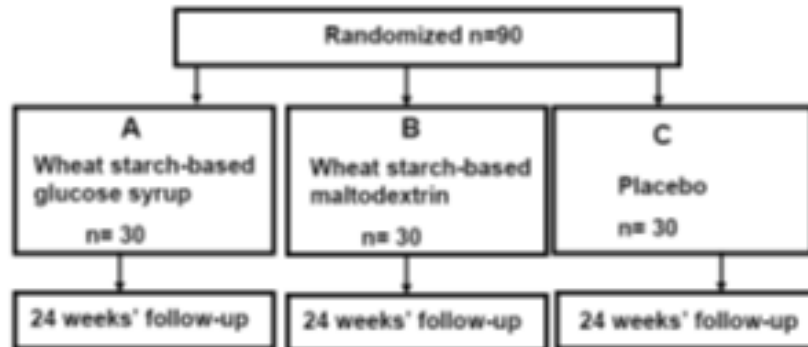
GSRs



PGWB



Evaluation of the safety of wheat-based starch hydrolysates in the context of coeliac disease



Kaukinen K. et al. Clinical trial: gluten microchallenge with wheat-based starch hydrolysates in coeliac disease patients - a randomized, double-blind, placebo-controlled study to evaluate safety. *Aliment Pharm Ther* 2008; 28: 1240-8.

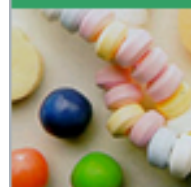


Association des Amidonniers et Féculiers

PERMANENT EXEMPTION OBTAINED FOR "ALLERGEN LABELLING" OF WHEAT-BASED MALTODEXTRINS, GLUCOSE SYRUPS, DEXTROSE

We are pleased to announce that on the basis of EFSA opinions, on 28 November 2007 the Commission published with the enclosed Directive 2007/68/EC, the list of food ingredients or substances permanently excluded from allergen labelling.

Starch hydrolysates are found in more than 50 % of the European processed food



**Confectionery
& chocolates**

**Dietetic preparations
& Baby foods**



**Ice cream
& dairy products**

Meat products



Baked goods

Frozen Foods



**Jams
& preserved foods**

Instant foods

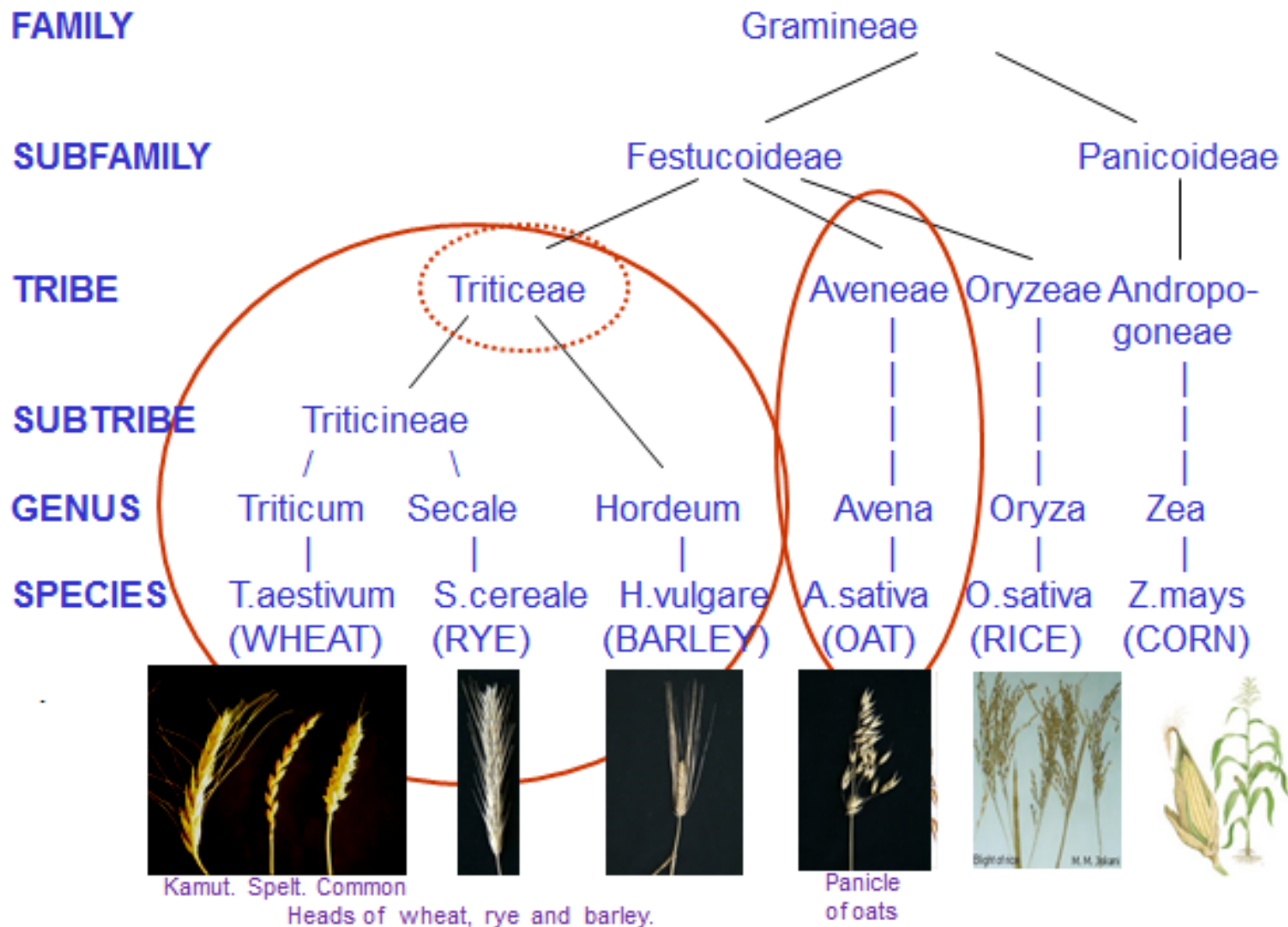


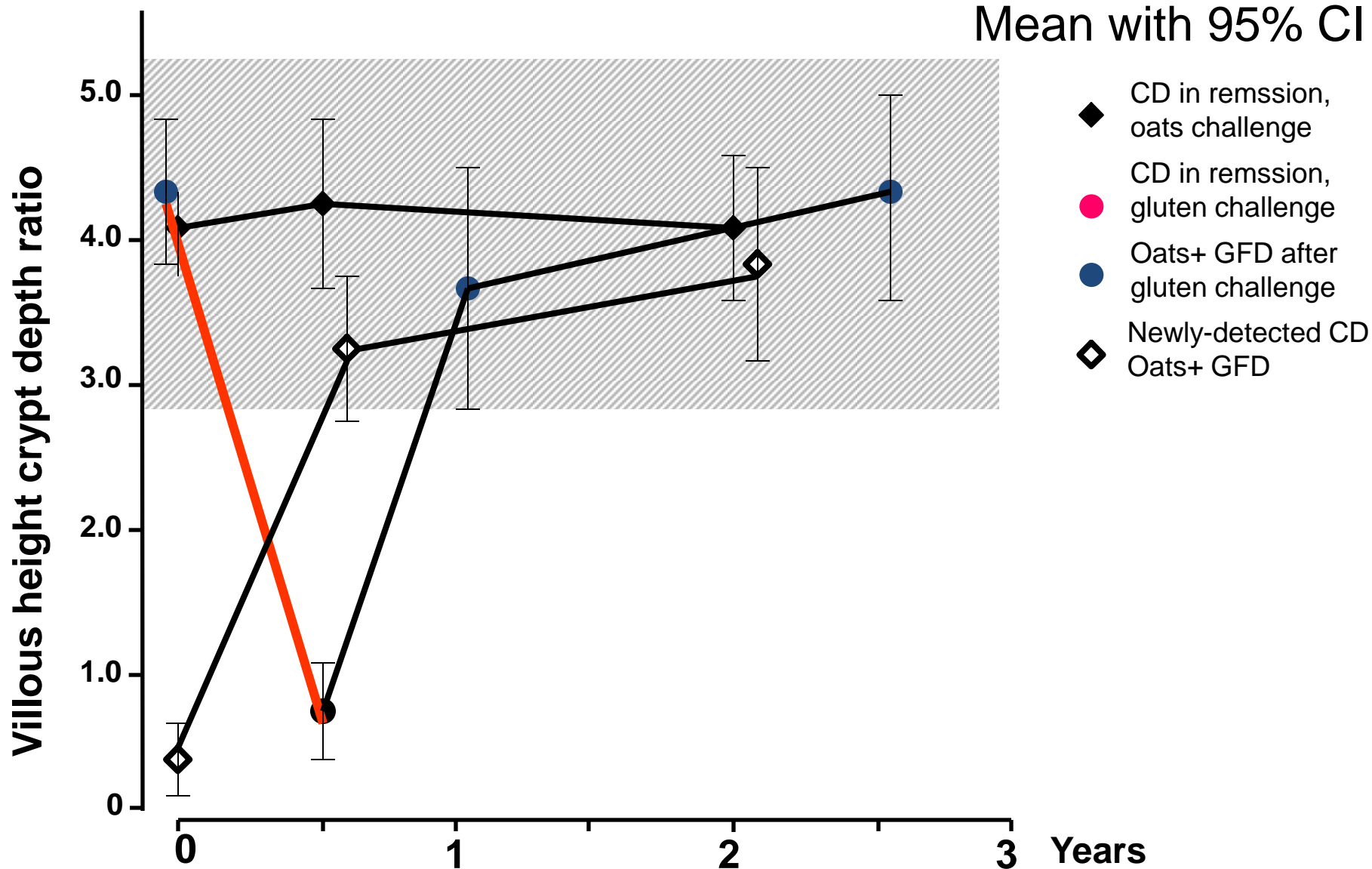
**Flavour carriers &
colours**

Beverages



Phylogenetic Relationship of Major Cereal Grains





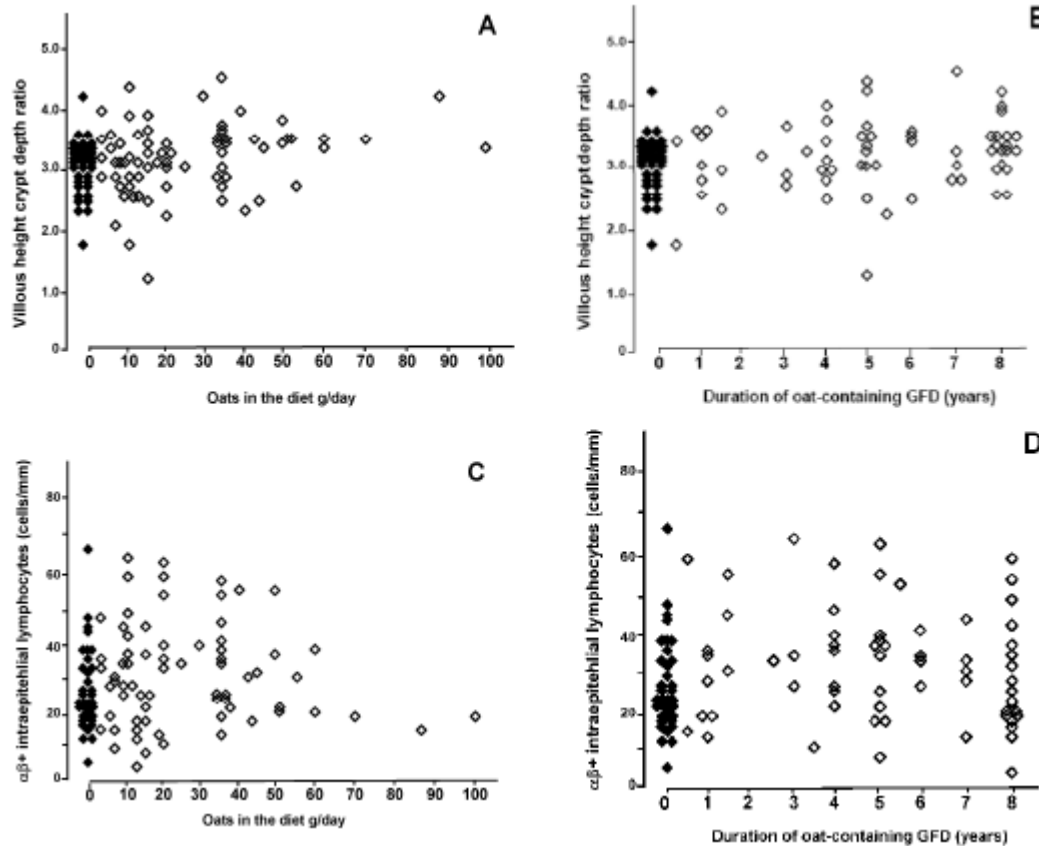
Article

Long-Term Consumption of Oats in Adult Celiac Disease Patients

Katri Kaukinen ^{1,2,3,*}, Pekka Collin ^{1,2}, Heini Huhtala ⁴ and Markku Mäki ⁵

Abstract: Many celiac disease patients tolerate oats, but limited data are available on its long-term consumption. This was evaluated in the present study, focusing on small-bowel mucosal histology and gastrointestinal symptoms in celiac adults maintaining a strict gluten-free diet with or without oats. Altogether 106 long-term treated celiac adults were enrolled for this cross-sectional follow-up study. Daily consumption of oats and fiber was assessed, and small-bowel mucosal morphology and densities of CD3+, $\alpha\beta$ + and $\gamma\delta$ + intraepithelial lymphocytes determined. Gastrointestinal symptoms were assessed by a validated Gastrointestinal Symptom Rating Scale questionnaire. Seventy (66%) out of the 106 treated celiac disease patients had consumed a median of 20 g of oats (range 1–100 g) per day for up to eight years; all consumed oat products bought from general stores. Daily intake and long-term consumption of oats did not result in small-bowel mucosal villous damage, inflammation, or gastrointestinal symptoms. Oat-consumers had a significantly higher daily intake of fiber than those who did not use oats. Two thirds of celiac disease patients preferred to use oats in their daily diet. Even long-term ingestion of oats had no harmful effects.

celiac disease patients; two patients using, and one not using oats had abnormal villous structure. A high daily oat intake and a long duration of oat intake correlated with a better small-bowel mucosal Vh/CrD ratio (Figure 1A,B). The densities of mucosal $\alpha\beta$ + IELs were not different between patients who did or did not consume oats (Figure 1C,D). Similarly, small-bowel mucosal CD3+ and $\gamma\delta$ + IEL counts did not



Perspectives in Practice

Oats Can Diversify a Gluten-Free Diet in Celiac Disease and Dermatitis Herpetiformis

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J Am Diet Assoc. 2004;104:1148-1150.

ABSTRACT

Finnish celiac disease and dermatitis herpetiformis patients have used oat-containing gluten-free diets since 1997. The aim of this study was to evaluate how the use of oats has been adopted. The use of oats and the effect of oats on symptoms and quality of life were investigated in 1,000 randomly selected members of the Celiac Society. Altogether, 710 patients responded: 423 (73%) with celiac disease and 70 (55%) with dermatitis herpetiformis were currently consuming oats. Patients appreciated the taste, the ease of use, and the low costs; 94% believed that oats diversified the gluten-free diet; 15% of celiac disease and 28% of dermatitis herpetiformis patients had stopped eating oats. The most common reasons for avoiding oats were fear of adverse effects or contamination. There is a market demand for oats, and celiac societies and dietitians should make efforts to promote the development of products free of wheat contamination.

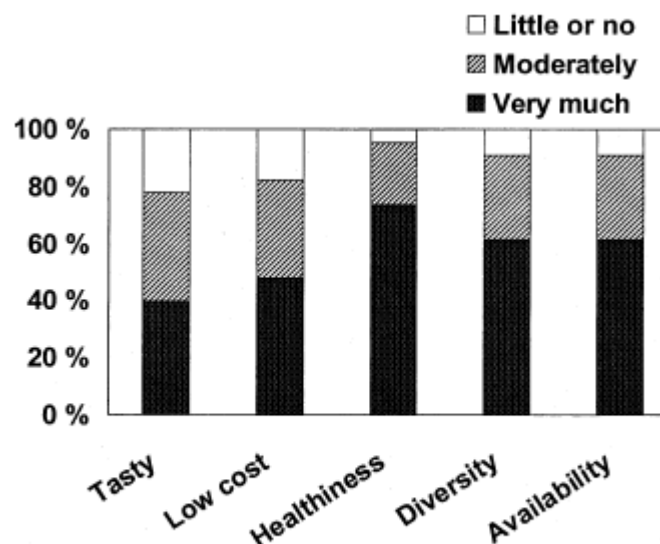
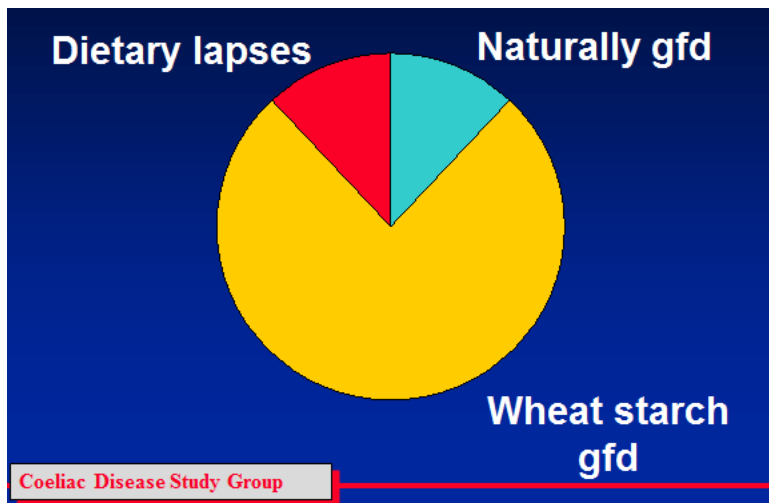


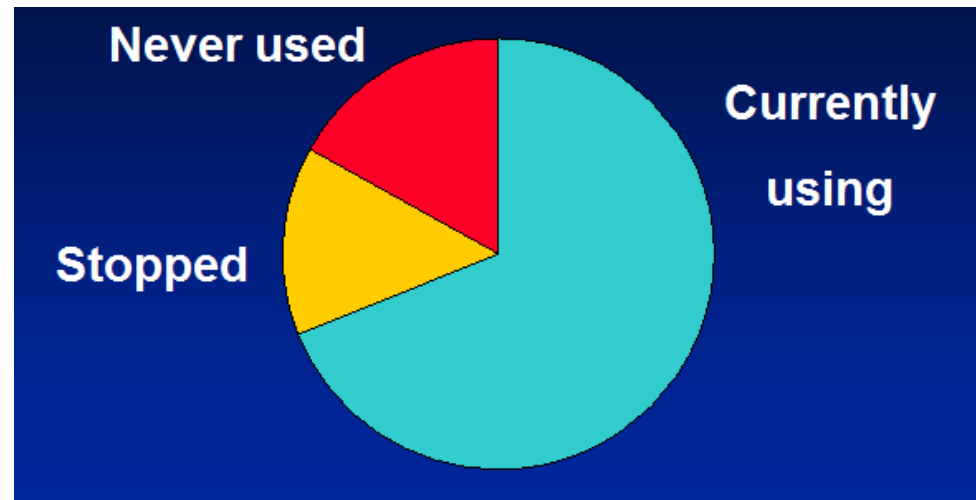
Figure. Reasons why celiac disease patients say they include oats in their gluten-free diet.

Acceptance of

Wheat starch



Oats



in Finland

**If you eat less of one thing,
you eat a lot of more of
something else.**

**And this something else may
have much more gluten in it.**

Thank you for your attention!