

BENEFITS of Restricting some carbohydrates: Management of Irritable Bowel Syndrome (IBS)

- It is the most common reason for people being referred to a specialist gastroenterologist.
- In Australia IBS affects ~ 15% of the population
- Characteristic gastrointestinal symptoms include; abdominal pain, bloating, wind, constipation and/or diarrhoea.

What are the causes of IBS?

- Altered gut microflora.
- Presence of small intestinal overgrowth of gut bacteria (SIBO).
- Hypersensitivity of the gut to luminal distension.
- Some foods known to trigger symptoms

Benefits of Restricting some carbohydrates: What are the treatments for IBS?

- Treatment is aimed at the control of the symptoms.
- The team at Monash have developed the Low FODMAP diet therapy that is based on restricting certain carbohydrates from the diet.
- what does FODMAP stand for.....

FODMAPs

- An 'umbrella term'- describe the range of short-chain carbohydrates that can be poorly absorbed and rapidly **fermented**
- It stands for...

FODMAPs

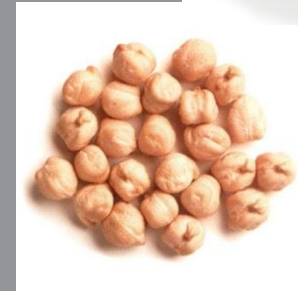
Fermentable

FODMAPs

Fermentable

Oligosaccharides

Fructans (including fructo-
oligosaccharides (FOS), &
galacto-oligosaccharides
(GOS))



FODMAPs

Fermentable

Oligosaccharides

Disaccharides

Lactose



FODMAPs

Fermentable

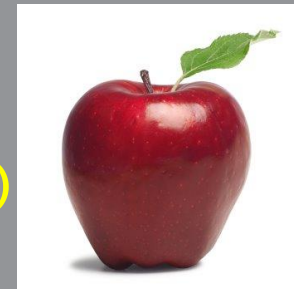
Oligosaccharides

Disaccharides

Monosaccharides

Free Fructose

(fructose in XS of glucose)



FODMAPs

Fermentable

Oligosaccharides

Disaccharides

Monosaccharides

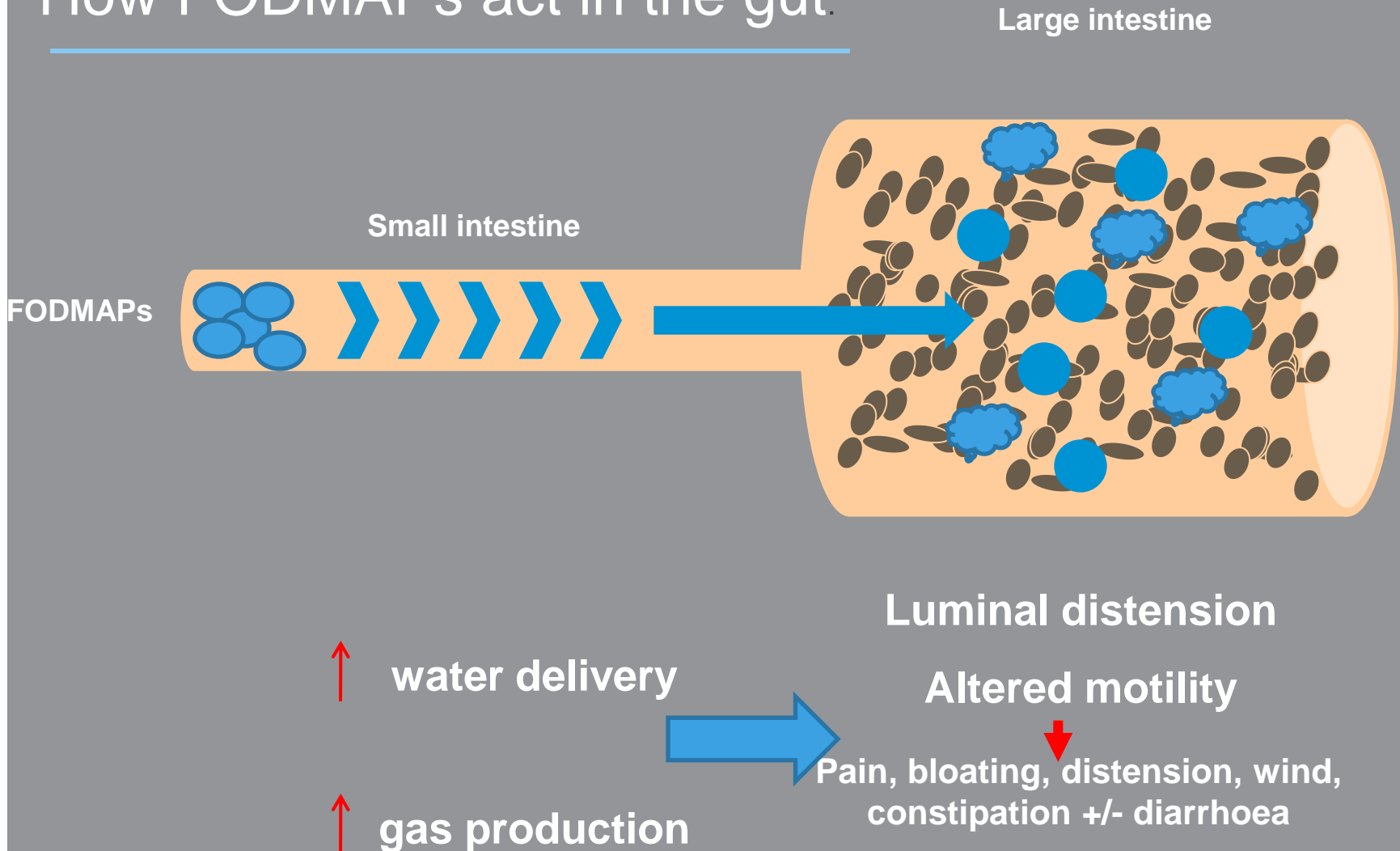
And

Polyols

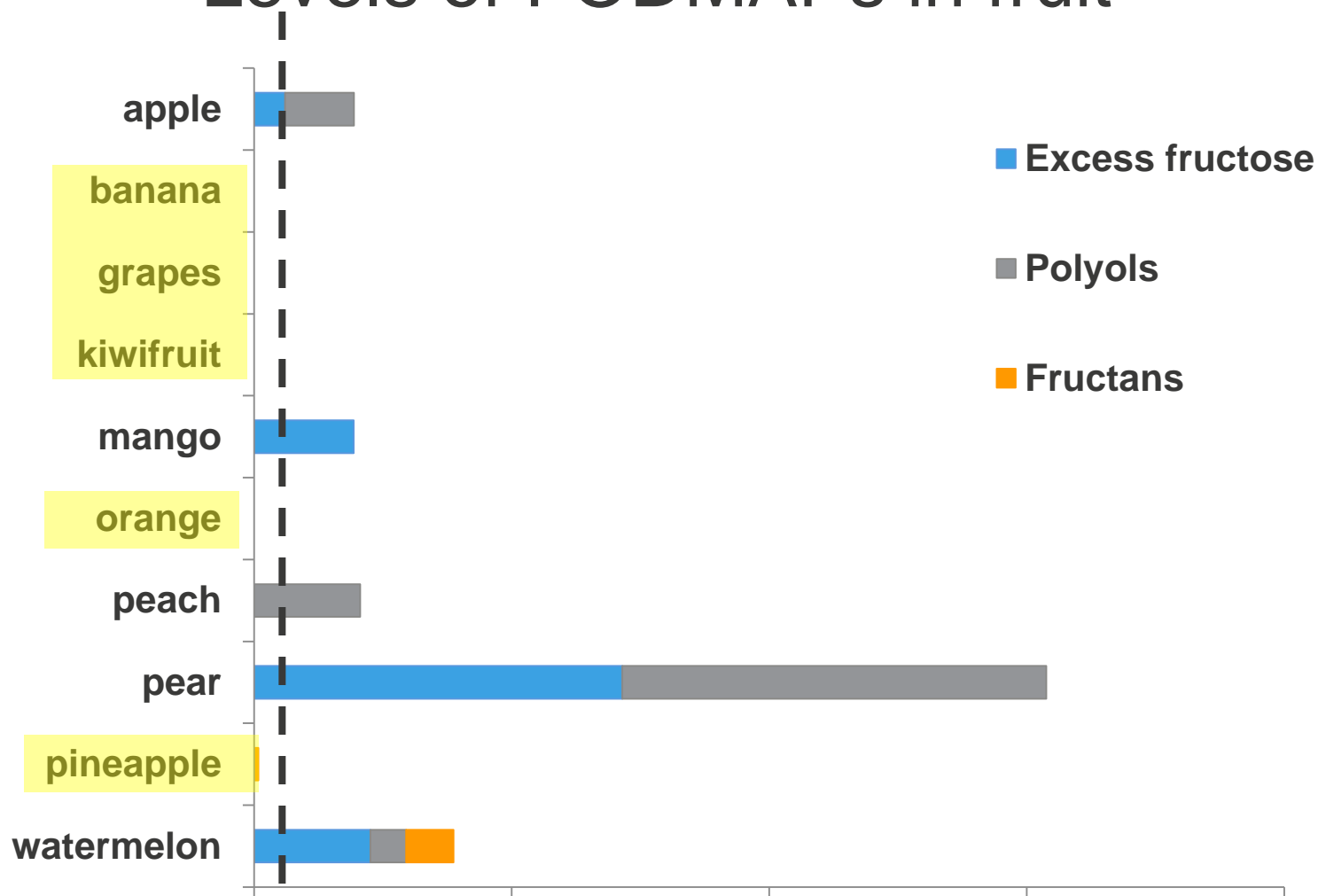
Sorbitol, mannitol



How FODMAPs act in the gut.

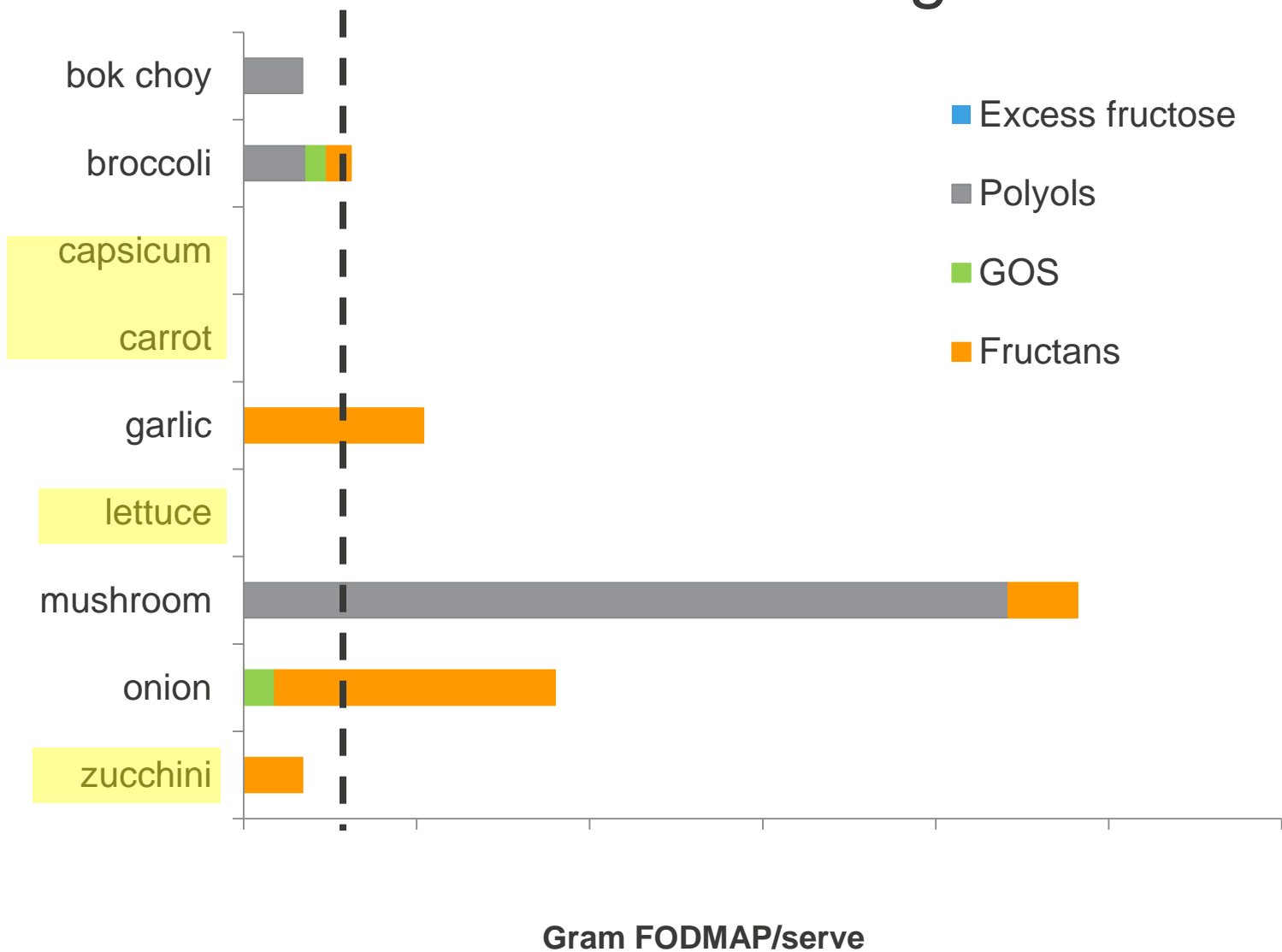


Levels of FODMAPs in fruit

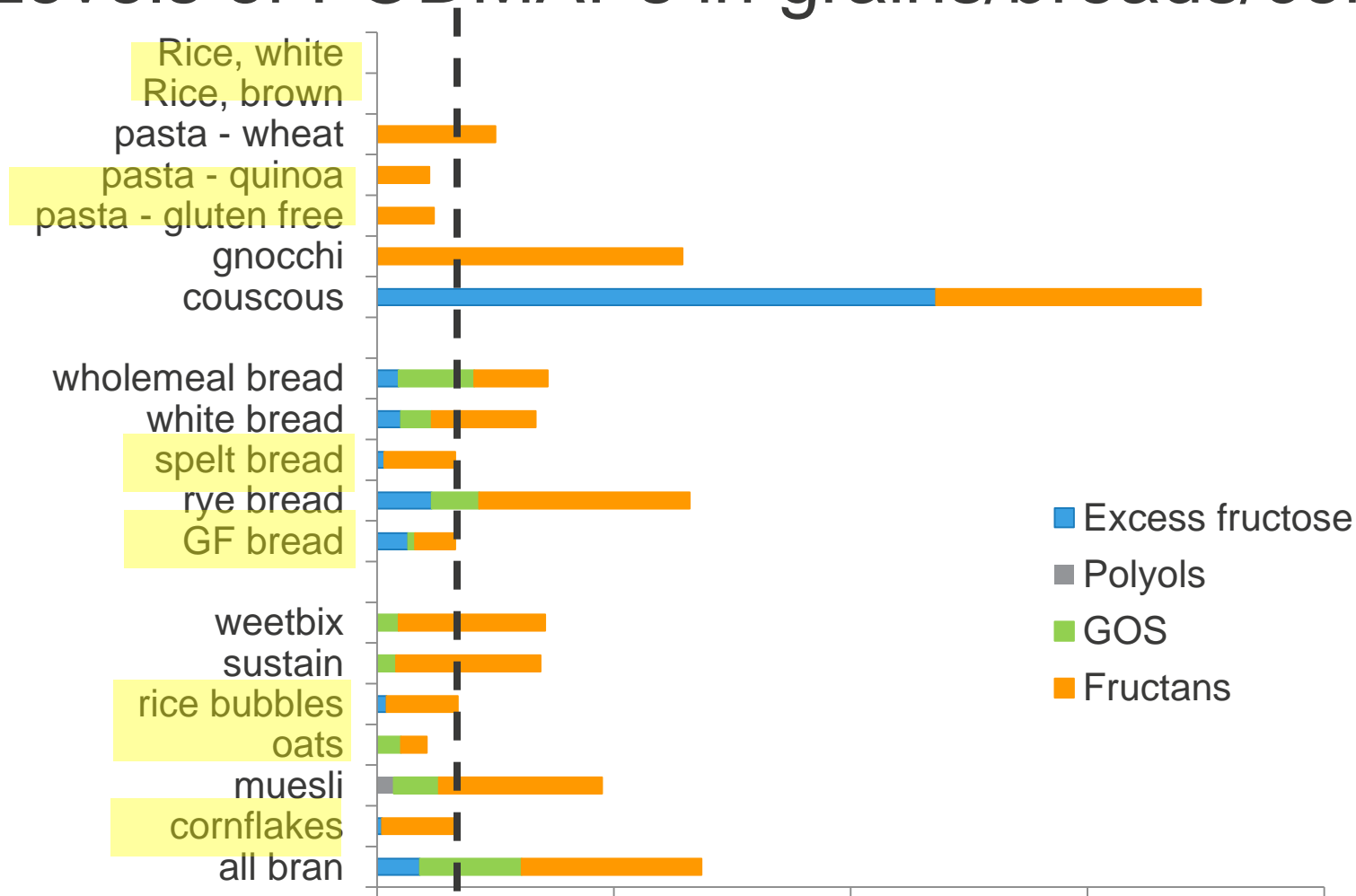


Gram FODMAP/serve

Levels of FODMAPs in vegetables



Levels of FODMAPs in grains/breads/cereals



Gram FODMAP/serve

Monash launches FODMAP smartphone app

► Find out more



References

- Skoog et al Neurogastroenterol 2008; Beyer et al JADA 2005; Choi et al Am J Gastroenterol 2003;
- Goldstein et al Isr Med Assoc J 2000; Rumessen et al Am J Clin Nutr 1998;
- Evans et al Scand J Gastroenterol 1998; Mishkin et al Dig Dis Sci 1997;
- Fernandez-Banares et al Gastroenterol 1991; Rumessen et al Gastroenterol 1988;
- Stone-Dorshow et al Am J Clin Nutr 1987
- A low FODMAP diet improves symptoms in 74% of IBS patients (Shepherd et al JADA 2006)
- A low FODMAP diet improves functional symptoms in 70% of IBD patients (Geary et al JCC 2009)
- Rechallenge of fructose, fructans or both, results in significant exacerbation of symptoms after a low FODMAP diet. (Shepherd et al CGH 2008)
- Digestion and fermentation of FODMAPs: A study in volunteers with an ileostomy (Barrett et al. Aliment Pharmacol Ther. 2010; 31:874-82.)
- Breath hydrogen and abdominal symptom production in volunteers consuming foods either low or high in FODMAPs (Ong et al. J Gastroenterol. Hepatol. 2010;25:1366-1373.)

Is the Low FODMAP diet for the long-term?

- No - not for the long-term
- The Low FODMAP diet is followed for 2-6 weeks, followed by review by a dietitian
- ...this is why it important to be aware of potential downsides of dietary restriction of some carbohydrates

Potential **RISKS** of Restricting FODMAP carbohydrates:

Potential health benefits of FODMAPs

- Substrates of bacterial fermentation → SCFA
 - **Butyrate** → important for colonic health (ant inflammatory & anticarcinogenic)
- Prebiotics (GOS, fructans) → selectively promote growth of 'good' bacteria → putative health benefits
 - e.g.,
 - Bifidobacteria
 - Butyrate-producing bacteria (*F. prausnitzii*, *C. coccoides*)

The low FODMAP diet may have a negative impact on these

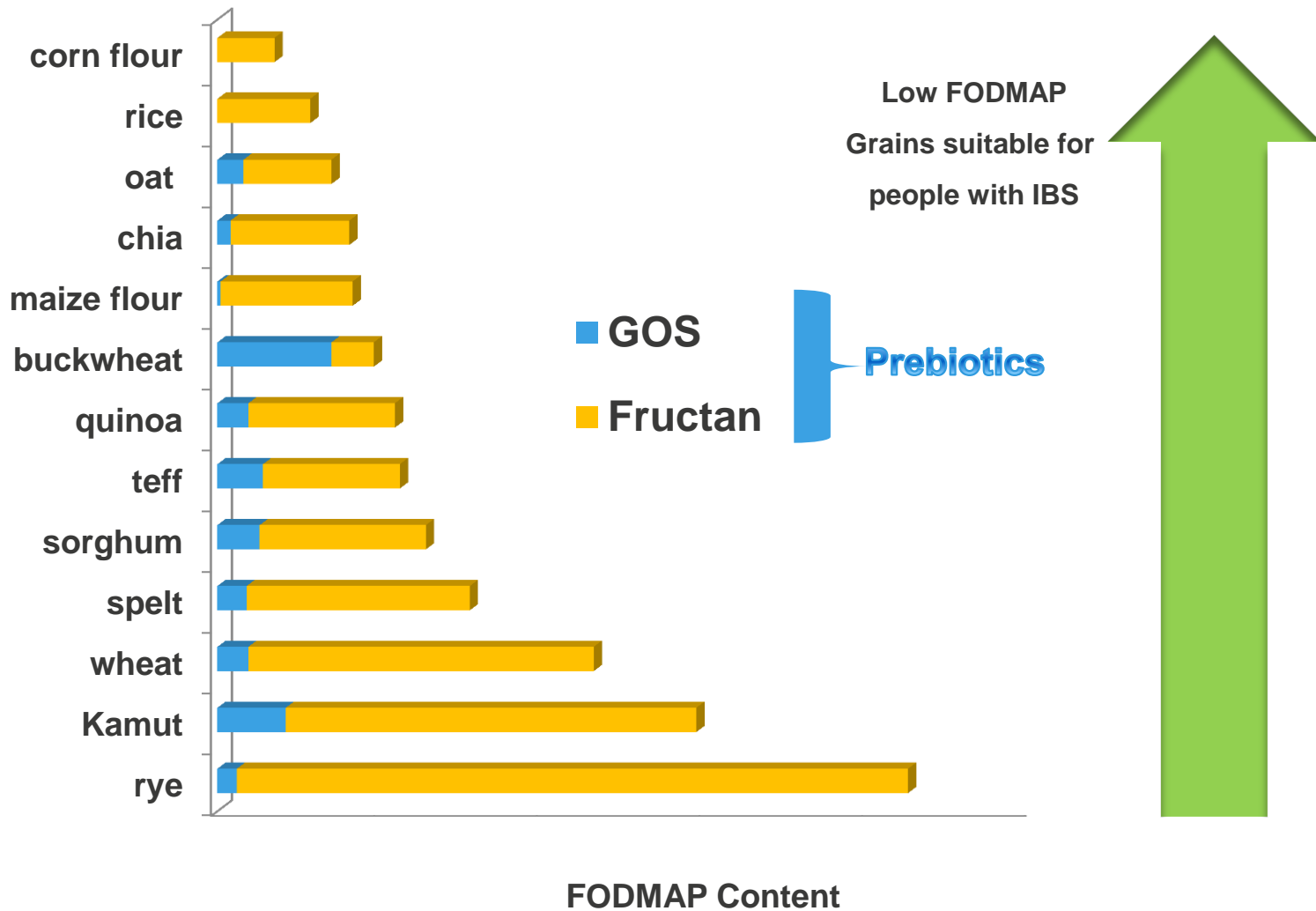
Evidence for potential 'downside' of the low FODMAP diet

- Staudacher et al (King's College Group)- With low FODMAP diet showed improved symptoms in IBS patients over 4 weeks. However, lower numbers of *bifidobacteria* with low FODMAP diet in patients with IBS. (ref. Staudacher et al Journal of Nutrition, 2012;142;1510-8.)
- Halmos et al (Monash University Group) -Showed improvements in symptoms in IBS patients over 3 weeks on the low FODMAP diet. However, on the low FODMAP diet, proportion of 'good' bacteria decreased- *Bifidobacteria* and Butyrate-producing (*F prausnitzii*, *C. coccoides*). (manuscript in preparation)-

Summary:

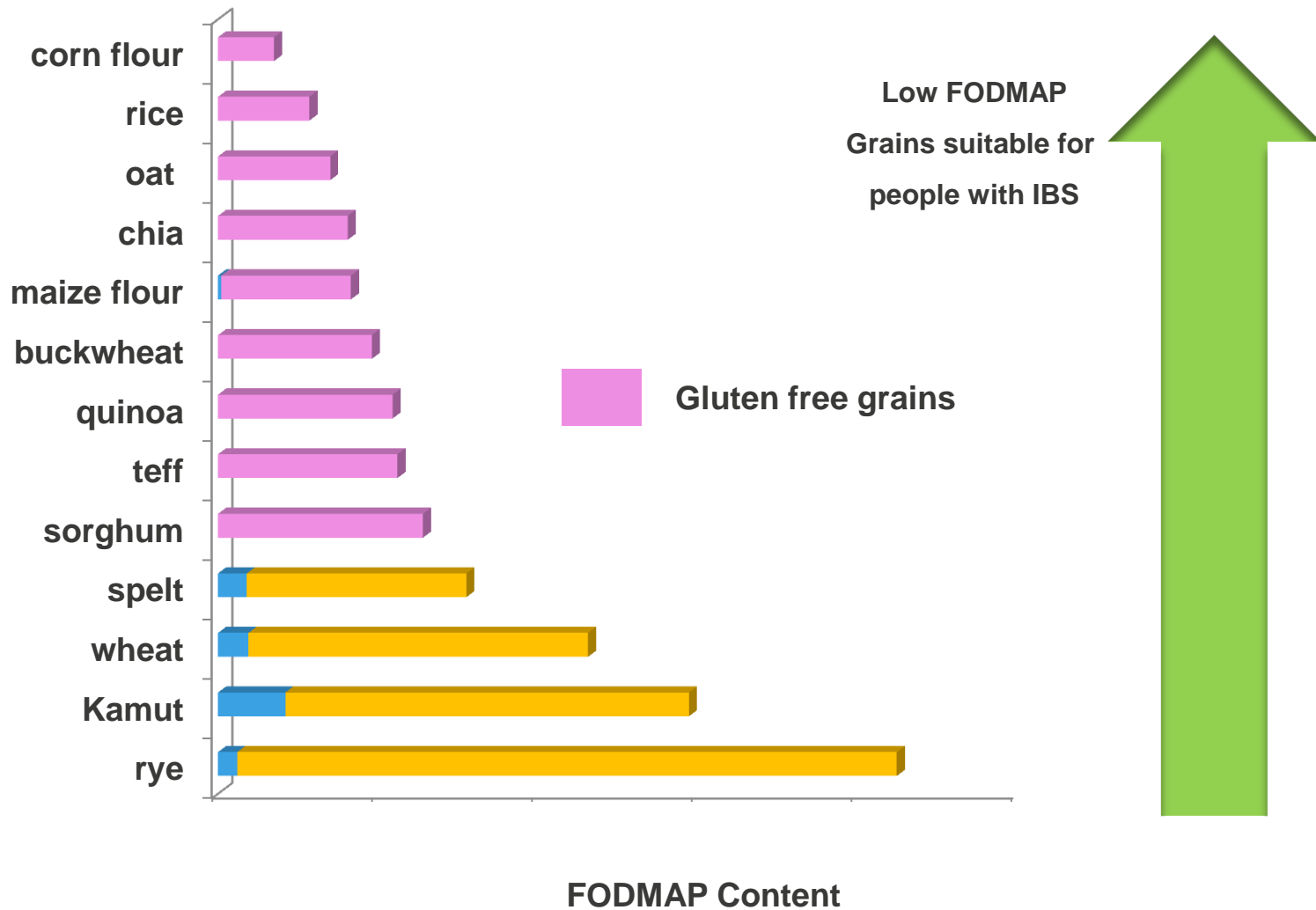
- **BENEFITS-** of restricting FODMAP carbohydrates for patients with IBS
- **RISKS-** However, restricting FODMAPs – also may lead to loss of prebiotic effect, this may have health implications in the long term.
- **RISKS –** This may also have implications for individuals following a **gluten-free, wheat-free diets**

FODMAP content of grains



(Muir, Suter, Mills, Biesiekierski, Bekes: unpublished data)

FODMAP content of grains



(Muir, Suter, Mills, Biesiekierski, Bekes: unpublished data)

Summary (cont.):

POTENTIAL RISKS

- Low FODMAP diet (and gluten-free diet) cannot be recommended for health in asymptomatic population.
- Strategies reversing the changes in microbiota should be investigated.

Research Team- Monash Acknowledgements

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