



OATMEAL FOR CHILDREN AND TODDLERS

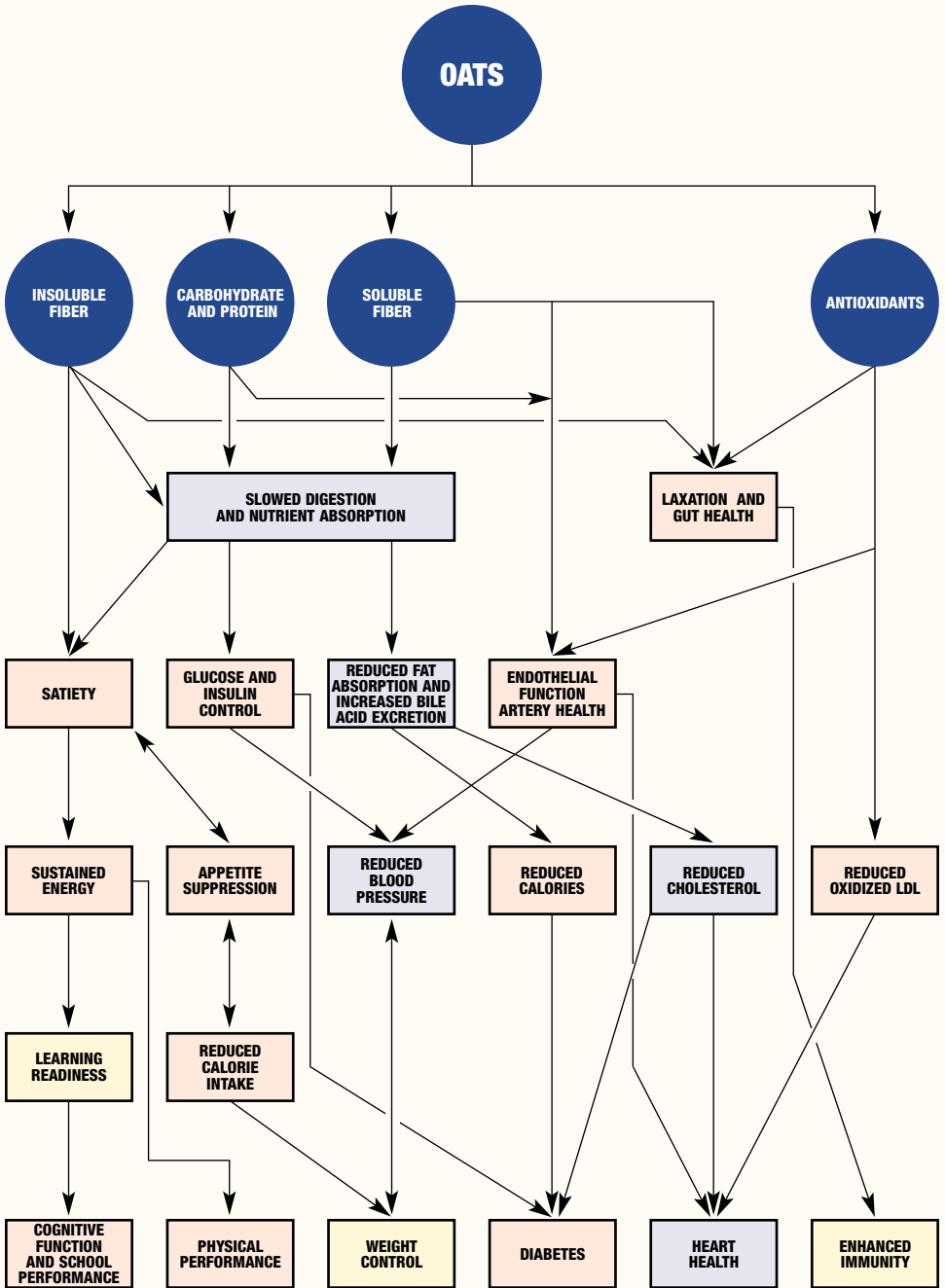
WHY OATMEAL MAKES SENSE FOR A CHILD

A Health Practitioner's Guide to Oats and Nutrition



Figure 1

POTENTIAL HEALTH BENEFITS OF OATS



 Substantial research exists on oats and this benefit/relationship

 A growing body of evidence suggests this benefit/relationship

 Need further scientific testing

This figure demonstrates established and potential benefits of oats, based on the body of evidence to date.

TAKE A CLOSE LOOK AT OATMEAL

Oatmeal is a natural, whole grain food that provides a great tasting, convenient and economical source of nutrients, such as complex carbohydrates, fiber, protein and antioxidants. Oatmeal and other whole-grain oat foods deliver a variety of health benefits (figure 1) for children and adults and help children meet the recommendations for whole-grain foods and fiber. Instant oatmeal along with its fortification not only offers children whole grain and fiber benefits, but also additional vitamins and minerals such as iron, magnesium, calcium, vitamins A, E, and the B vitamins. The oat grain is an important contributor to children's health and nutrition, and warrants a closer look at some of its natural features.

POTENTIAL BENEFITS OF OATS FOR CHILDREN

The prevalence of obesity and overweight has reached epidemic proportions affecting 25-30% of children in the United States. Even in childhood, overweight is associated with several medical problems that include coronary heart disease, insulin resistance and diabetes mellitus, hyperlipidemia, increased cholesterol, elevated blood pressure, sleep apnea and many others.¹

Diet, physical activity and psychological support remain cornerstones in the effective management of overweight children and complexities associated with overweight children. Emerging data suggests that oatmeal may contribute to weight control through increased satiety and reduced calorie intake at lunch – both the protein and fiber content in oatmeal may be contributing to this effect.² The hypocholesterolemic effects of oats have been well documented and established in more than 40 clinical studies. More recently, four of five clinical studies in adults have also shown that the fiber in oats can provide meaningful reductions in systolic and diastolic blood pressure.³⁻⁷ Research to date also suggests that the fiber in oats may also help improve glycemic control.⁸

Fortified oatmeal provides children much needed dietary fiber and several key nutrients contributing to a healthy breakfast. Research over the past few decades has shown that apart from helping to improve overall diet quality, nutrient intake, and lower blood cholesterol levels, breakfast consumption has also been associated with improved cognitive function and school performance.^{9,10} Two recent studies on cognition that included oatmeal, with children aged 6-8 and 9-11 years, showed that while children did better on several cognitive tasks with breakfast versus no breakfast, when children ate oatmeal versus no oatmeal or cold cereal they performed better on some cognitive tasks of memory and attention.^{11,12} These favorable results with oatmeal may be a result of a more sustained release of glucose to the brain from the more slowly digested oatmeal. While further research in children using oatmeal and oat fiber is needed, given the science to date, it is reasonable to suggest that healthy habits and foods such as oatmeal within a balanced and individualized diet can provide several health and nutritional benefits.

WHY OATS ARE DIFFERENT FROM OTHER GRAINS

Oats are a good source of total dietary fiber, which includes insoluble and soluble viscous fibers. Oats have a much higher percentage of the heart healthy soluble viscous fiber called beta-glucan than other commonly eaten grains such as whole wheat, rice or corn.¹³

Compared to other grains, oats contain a favorable ratio of lipids and contain unsaturated fats, including the essential fatty acid linoleic acid.^{13,14} On a per gram basis oats have higher concentrations of protein, fat, calcium, iron, magnesium, zinc, copper, manganese, thiamin, folacin, and vitamin E than other whole grains, such as wheat, corn, rice, barley, and rye.¹³

One of the reasons oats have been long recognized for superior nutritional value is because of the high percentage of protein (typically, 15-20% of the groat) as well as the superior amino acid balance versus other grains.¹³ Oats also contain several antioxidant phytonutrients including vitamin E tocols, caffeic and ferulic acids, flavonoid and non-flavonoid phenolics including a group of novel antioxidants – avenanthramides.^{15,16}

OATMEAL FOR CHILDREN AND TODDLERS

Quaker makes a variety of instant oatmeal suitable for toddlers and children. Quaker Instant Oatmeal is available in convenient, single-serve packets, a variety of flavors, textures and contains key nutrients including fiber and iron. Packet sizes vary primarily due to the added flavor ingredients. Milk may be substituted for water when preparing oatmeal for added taste and nutritional benefits.



TYPES OF QUAKER® OATMEAL

All of Quaker's "oatmeal products" are whole grain and are equally nutritious. The milling process effects only the texture of the cooked cereal and the cooking time.

Quaker Old Fashioned and Quick Oats – contain the bran, endosperm and germ. Both are a good source of fiber.

Quaker Instant Oatmeal – contains the bran, endosperm and germ. All Instant products are fortified with 8 vitamins and minerals and are a good source of fiber.

Table 1

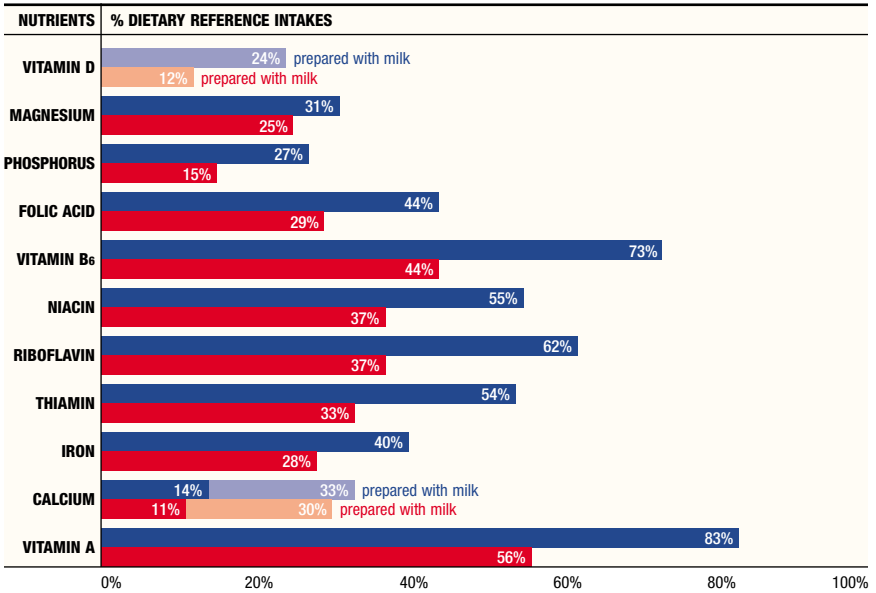
MACRONUTRIENT CONTRIBUTIONS OF 1 SERVING FORTIFIED FLAVORED QUAKER INSTANT OATMEAL*

NUTRIENTS	CHILDREN (4-8 years)	TODDLERS (1-3 years)
SERVING SIZE	43 g (1 packet)	21 g (1/2 packet)
CALORIES	160	80
FAT (g)	2	1
CHOLESTEROL (mg)	0	0
TOTAL CARBOHYDRATES (g)	32	16
DIETARY FIBER (g)	3	1
SUGARS (g)	13	6
PROTEIN (g)	4	2

* Values shown in table 1 and figure 2 are based on nutrient content of Quaker Maple & Brown Sugar Instant Oatmeal

Figure 2

NUTRIENT CONTRIBUTIONS OF 1 SERVING FORTIFIED FLAVORED QUAKER INSTANT OATMEAL*



■ Children (4-8 years) 1 packet (43g) ■ Toddlers (1-3 years) 1/2 packet (21g)
 Note: Calcium and vitamin D values reflect oatmeal prepared with vitamin D milk – 1/2 cup (children) and 1/4 cup (toddlers)

* Values shown on this chart are the amounts of the nutrients compared against the actual recommendations; The National Academy of Sciences' 1997-2002 Dietary Reference Intakes (DRIs). Percent values seen on a food label however are compared against Daily Values instead. DRI: Dietary Reference Intake DV: Daily Values (used in food labels are based on a 2000 calorie diet)

FORTIFICATION OF QUAKER INSTANT OATMEAL

Childhood is a time of rapid growth and development. National research data indicate that children's diets may be low in several key nutrients including fiber, iron, calcium, vitamins A, B₆, and folic acid.¹⁷ Oatmeal provides a reliable source of these nutrients.

Fiber & Whole Grains – Children should have a minimum of 3 servings of whole grain foods daily. This will help them meet the NAS 2002 daily fiber recommendations set at an intake of 14 g per 1000 calories (or 19-38 g of total fiber/day) for children and adolescents aged 1-18 years.¹⁸ Current government intake data indicate that less than one-third of school children consume enough fiber to meet the generally accepted 'age+5 g/day' guideline.¹⁹ School children consume less than one serving

of whole grains; less than a third of the recommended intake.²⁰ Nationally representative data also show that only 5% of children 2-18 years meet the NAS 2002 fiber recommendations.²¹ One serving of any Quaker Instant Oatmeal, (1 packet) provides at least 2 g of dietary fiber and a 40 g serving of Quaker Old Fashioned or Quick Oats has 4 g of dietary fiber.

Iron – Iron deficiency, with or without anemia, persists as the number one micronutrient deficiency in the world, including the US. Identification and treatment of iron deficiency remains a high public health priority. Only about 60% of children under age 5 consume adequate iron to meet the recommended level for iron.²² One serving (1 packet for children and 1/2 packet for toddlers) of regular, unflavored Quaker Instant Oatmeal provides 82% and 59% of the

Dietary Reference Intake for iron for children and toddlers, respectively (data not shown). One serving of flavored Quaker Instant Oatmeal provides 40% and 28% (figure 2) of the Dietary Reference Intake for iron for children and toddlers, respectively. Regular, unflavored Quaker Instant Oatmeal has a higher iron content because it is fortified to meet WIC iron fortification requirements.

Calcium – Calcium has a variety of key functions in the body. Calcium contributes to bone and tooth formation, blood clotting and nerve-impulse transmission. Nearly one-third of children under 5 years of age fail to meet calcium recommendations.¹⁷ One serving of Quaker Instant Oatmeal prepared or served with milk is an excellent, reliable source of dietary calcium.

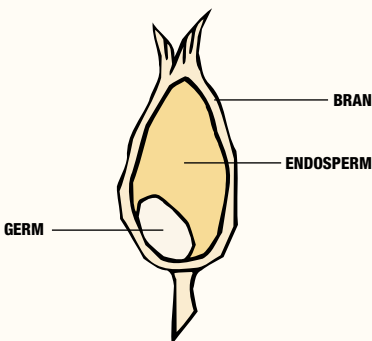
B-vitamins – B vitamins in their coenzyme forms participate in numerous metabolic reactions. Thiamin and riboflavin are active in energy

metabolism; niacin is critical to cellular energy transfer reactions; vitamin B₆ is important for protein metabolism and neurotransmitter synthesis; and folic acid participates in DNA and RNA synthesis. One serving of Quaker Instant Oatmeal meets 29-73% of the recommendation for several of the B-vitamins (thiamin, riboflavin, niacin, B₆ and folic acid) for growing children and toddlers (figure 2).

Vitamin A – Over 40% of children (6 to 9 years) do not consume adequate food sources of vitamin A daily to meet the recommended level for this nutrient which is important for vision and cell and tissue growth.²² While some fruits and vegetables are excellent choices for beta-carotene, fortified cereals such as oatmeal also provide vitamin A palmitate. One serving of any fortified Quaker Instant Oatmeal provides at least 56% of the recommended intake of this important vitamin for growing children and toddlers (figure 2).

HOW AN OAT BECOMES OATMEAL

Whole grains such as oats contain all three parts of the grain: the germ, endosperm and bran. When oats are milled, all parts of the grain remain – bran, germ and endosperm. The result is a food with more vitamins, minerals, fiber, antioxidants, and other phytonutrients than a refined grain.



BRAN The outer layers of the grain that contain much of the B-vitamins, minerals and dietary fiber.

ENDOSPERM The inside of the grain with most of the carbohydrate and protein, and smaller amounts of vitamins and minerals.

GERM A new plant sprouts from here. It houses B-vitamins, heart healthy oils, minerals and some protein.



Groats – Oats harvested from the field have an inedible outer layer (hull) that protects the grain during growth, harvesting and shipping. The hull of the grain must be removed to make the grain edible. The hull is removed in a mechanical process that leaves the whole grain inner portion called the groat.



Quaker Old Fashioned Oats – The groat is steamed and roasted to inactivate the enzymes that may cause rancidity and to impart a toasted flavor. The whole groat is then steamed and rolled flat.



Quaker Quick Oats – The groat follows a milling process similar to Old Fashioned Oats except the whole groat is cut into thirds, steamed again, and rolled thinner than Old Fashioned Oats.



Quaker Instant Oats – The whole groat is cut into thirds, steamed and rolled thinner than the groats used in Quick Oats. Because of higher roasting temperatures and the thinness of the instant flakes, they cook when hot water or milk is added.

Quaker Old Fashioned Oats, Quick Oats and Instant Oatmeal are all whole grain cereals, which means they are all equally nutritious and contain all parts of the oat grain, including the bran, endosperm and germ. The main difference among these oat cereals is the thinness of the flake due to milling. The flake's thickness determines the amount of time, temperature and moisture that is needed for rehydration purposes. Regardless of the flake's thickness, the fiber

content remains unchanged, ie. both the viscous soluble and insoluble fractions.

Therefore, consuming nutrient-dense foods, such as Quaker Instant Oatmeal, not only helps meet vitamin, mineral and fiber needs without excess calories, it also helps promote health, and helps children reach the Food Guide Pyramid target of 6-11 grain servings a day, three of which should be whole grain.



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