



# **APPENDIX A**

**Letter from B.E. Knuckles  
with  $\beta$ -glucan Solubility Data 1/28/04**



United States Department of Agriculture

Research, Education and Economics  
Agricultural Research Service

January 28, 2004

Dr. Christine Fastnaught  
717 14th St. S.  
Fargo, ND 58103

Dear Dr. Fastnaught,

The results of the analyses for the samples of oats and barley are in the table on the following page. The samples were milled in a Udy with a 0.2 mm screen and analyzed by the enzymatic method (AACC). The soluble glucans were extracted by heating (40 or 100 °C) in water, centrifuging, and analyzing the solutions. Note: the oat extracts, after centrifuging, were not clear but had a white colloidal like suspension. The suspended materials maybe starch which may have contributed to greater than actual solubility values. Extraction at 100°C may improve extraction of glucan from barley pearls but not flakes. The flaking process may make the glucan more available to extraction.

Sincerely,

A handwritten signature in cursive script that reads "Benny E. Knuckles".

Benny E. Knuckles  
Research Chemist



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Content and solubility (in water) of beta-glucans in oat and barley samples provided 1/2004

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<u>Material</u>	<u>Glucan. %<sup>2</sup></u>	<u>% soluble glucan<sup>1</sup></u>	
		<u>40°C</u>	<u>100°C</u>
Quaker quick oats, purchased 1/2004	4.34	47.6	55.9
Quaker quick oats, purchased 1/2000	4.22	44.4	38.1
Old fashion oats	4.64	41.5	43.4
Barley pearls, 2001	4.98	49.9	59.6
Barley flakes, 2001	4.94	51.0	50.0
Barley pearls, 2002	5.14	57.4	59.9
Barley flakes, 2002	5.35	50.9	50.1

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<sup>1</sup>Percent of glucan which was soluble in water at 40°C for 2 hr or 1 hr at 100°C.

<sup>2</sup>Percent Beta-glucan on as is basis.



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