Canaryseed
New Uses Project

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The Pathfinders Research & Management Ltd
CDCS Annual General Meeting
January 11, 2010
New Uses Project
Canary seed as a Human Food

Purpose
- Regulatory approval for use of canary seed grain as a human food
- Market potential and opportunities

Two (2) projects:
- Safety Assessment Project
- Market Assessment Project

Next Steps
Safety Assessment Project

- History of Use
- Dietary Exposure
- Compositional Analysis
  - Nutritional Values
  - Antinutritional values
- Allergenicity
- Toxicity
- Nutritional (digestibility)
- Publications
Dietary Exposure

- Contracted UofS Researcher: Hassan Vatanparast
- Identified dietary exposure of Canadians to food grains and seeds and pulses
  - Comparing consumption of whole grain products to refined grain products
  - Products: bread, pasta, buns, tortillas, crackers, breakfast cereals etc
  - Seeds (sesame, flax, poppy, other nuts)
  - Pulses
- Used data from the Canadian Community Health Survey
Dietary Exposure
Products containing
- Whole grains
- Refined grains
- Seeds
- Pulses

Product Development
Whole grain products
- Breads
- Tortillas
- Pasta
- Nutrition bars
- Confectionary
Compositional Analysis

Extent of testing
5 locations in SK
3 plots at each site
3 varieties: CDC Maria, 2 new yellow seeded varieties
2 years of data: 2007, 2008

Total: 90 Samples
Proximate Analysis: protein, carbohydrate, oil, ash, moisture
Compositional Analysis

Proximate Analysis showed minimal differences between plots at each site
- Combined plots at sites

Complete compositional analysis done on 18 samples

Analysis completed: protein profile, amino acid profile, fatty acid profile, phytosterols, B vitamins, macro minerals and elements, heavy metals, mycotoxins

In progress: antinutritional factors (inhibitors, phytic acids, phenols, alkaloids)
Allergenicity

• Major consideration in evaluating the safety of a new food

• Step 1
  – Determine cross reactivity with the allergens considered a top priority by Health Canada (& other jurisdictions)
    • Soy, peanut, nuts (almonds, hazelnut, walnut), mustard, wheat (gluten), sesame

• Step 2
  – Protein and amino acid sequencing to compare sequences with international databanks of known allergen amino acid sequences
Toxicology/Nutritional

Rodent trials: subchronic toxicity and one generational reproductive studies

Poultry trials: nutrient digestibility and subchronic effects on growth

To commence in summer 2010
Publications

Five (5) publications for 2010

1. Composition of phytochemicals and minerals in hairless and hairy canaryseed
2. Microstructure and nutrient composition of hairless canary seed and its potential as blending flour for food use
3. Fractionation of hairless canaryseed (*Phalaris canariensis*) into starch, protein, fiber and oil for food and non-food uses
4. Nutrient digestibility of canary seed (*Phalaris canariensis* L.) by broiler chickens
5. A subchronic toxicology study of haired and hairless Canary seed (covered and groats) (*Phalaris canariensis* L.) and its affects on the growth performance of broiler chickens
Market Assessment Project

Market Assessment (Phase 1)

• Initial set of interviews conducted in food research, product development, food product manufacturing, food formulation R&D

Findings

• Keen interest in the introduction of a new crop
• Need for a complete package of information highlighting canary seed attributes
Market Assessment

Three critical components needed to be addressed

• Image and branding- name change ?
• Better understanding of the functionality and composition
• Provide examples of product development
Market Assessment

Phase 2: Trends and Market Identification

• **Health and Wellness**: Breads, grains, enriched breakfast cereals, health enhanced teas and energy drinks and healthy snack foods are the main health and wellness food products in North America.
Trends

• **Convenience**: Busy lifestyles translate to consumers wanting foods that can be consumed on-the-go...for all meal occasions.

• **Weight Management**: Diet-related foods are increasing in popularity due to the rising incidence of obesity. Beverages, formulated as meal replacements, and bars, to alleviate mid-day/evening hunger, are rapidly gaining market share.
Trends

• **“All Natural”**: In the mind of the consumer “natural” is synonymous with “healthy”. Many food companies are reformulating foods and adopting market strategies based on this concept to assure consumers that products are healthy and safe.

• **Environmental Sustainability**: Agricultural sustainability, reduced use of water and electricity, transportation and participation in free trade supply chains are important issues for consumers wanting “green” products.
Trends

• **Scientific credibility**: It is expected that new healthy food ingredients will have strong scientific credibility. The challenge lies in communicating and marketing that science effectively—to consumers, and for ingredient suppliers, —to their customers.
The “…new expectation [in the food industry] is an interconnected supply chain that is committed to food safety, sustainability, innovation, new product development and satisfying customer interests”.
Market Assessment

Phase 2: Identification of key food sectors to pursue for market opportunities
  – Bakery
  – Snack foods including nutrition/energy bars
  – Pet foods

Directed Product Development
Product Development

- Canadian International Grains Institute
- Guelph Food Technology Centre
- Manitoba Food Development Centre
- Private industry
Tortillas

Yellow CS

Tortillas

Brown CS

Photos: CIGI
Pasta

100% durum  25% brown  25% yellow

Photos: CIGI
Snaps

Photos: CIGI
Roasted YS

Non-roasted YS

Snaps

Roasted YS

Photos: CIGI
Next Steps

Safety Assessment
- Complete compositional analysis (MR 2010)
- Allergenicity (MR 2010)
- Toxicology (MR 2011)

Market Assessment (by MA 2010)
- Complete PD at Food Centres (muffins, nutrition bars)
- Food company interviews
- PD with industry
- Final report
Funding Support

The Canaryseed Development Commission of Saskatchewan appreciates the financial support of Agriculture and Agri-Food Canada’s “Advancing Canadian Agriculture and Agri-Food Saskatchewan (ACAAFS) program. The ACAAFS program is delivered by the Agriculture Council of Saskatchewan.
Questions?

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