



CONTROL OF NUTRITIONAL AND SENSORY PROPERTIES OF NEW EXTRUDED FOODS FROM GRAIN AND LEGUMES

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GOALS: Develop new healthy cereal and legume foods using modern extrusion processing. Maintain or enhance sensory properties (flavor, color, texture) of products developed.

APPROACHES: Extrusion parameters and textural modifiers such as soluble fiber, starch, and protein will be used to control and or improve physicochemical, nutritional and sensory attributes of products such as precooked legume flours, instant rice products and expanded snack foods. Brans, high beta-glucan flour, and other grain fractions will be extruded and the products evaluated by collaborators for health benefits. Evaluate processing effects on labile colors, flavors, and antioxidant compounds.

ACCOMPLISHMENTS: Precooked pinto and black bean flours have been produced on a continuous basis by twin screw extrusion in a much shorter time than the traditional kettle cooking and subsequent drum-drying process. These flours have a wide range of functional properties achieved by varying flour pretreatment, moisture level and extrusion parameters. Pretreatment conditions have been explored for reduction or elimination of flatus producing indigestible sugars in legume flours. The effect of processing on antioxidant activity and on the natural antioxidant colors anthocyanins and lycopene has been determined.

PLANS: Determine the effects of selected leavening agents on the physical and chemical properties of legume flour extrudates. Decrease the non-digestible sugars in extruded legume products. Identify the antioxidant phytonutrients in black sorghum, a potential source of concentrated phytonutrients. Determine composition and extrusion parameters which may produce precooked artificial rice grains with specific rehydration properties.