The Utilization of Whey Proteins in Bakery Industry

- They increase baking efficiency (higher bread volume and its regularity)
- Lactose and whey proteins are providing desirable colour and taste
- Whey proteins are also responsible for appropriate product texture (crispness) and prolong its freshness (retard starch retrogradation). While they are applied, no other food additive must be added to obtain following technological benefit

Whey Proteins in the Meat Industry

- **The 1-2 % whey protein addition is used to improve water holding capacity of the product (sausages, hot dogs)**
- **Stabilize water-fat mixtures and prevent emulsion disintegration**
- **Fat replacer (textural agent)**
- **Used in the meat curing (taste and colour determinants)**
- **Increase production yield by limiting the thermal losses**
- **Except for technological benefits, whey protein addition also increases the nutritional value of the obtained products**

Whey Proteins in Dairy Industry

Sour Cream

Cottage Cheese

Yogurt

Dip

Butter

Cheese

Dessert

Condiments

WE DO DAIRY!

Edible Protein Films

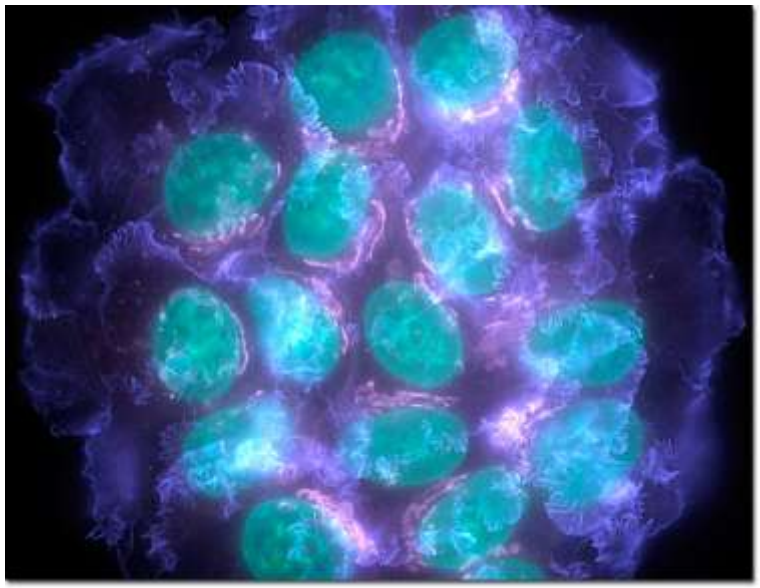
- Whey proteins make excellent oxygen, aroma and oil barrier films
- Transparent, glossy and totally bland in aroma and flavor
- Can replace plastic wrap
- Have no effect on flavor, they can be prepared and eaten with the food, leaving nothing to remove and throw away
- Useful in maintaining the original flavor of fat-containing foods

AIDS Supporting Treatment

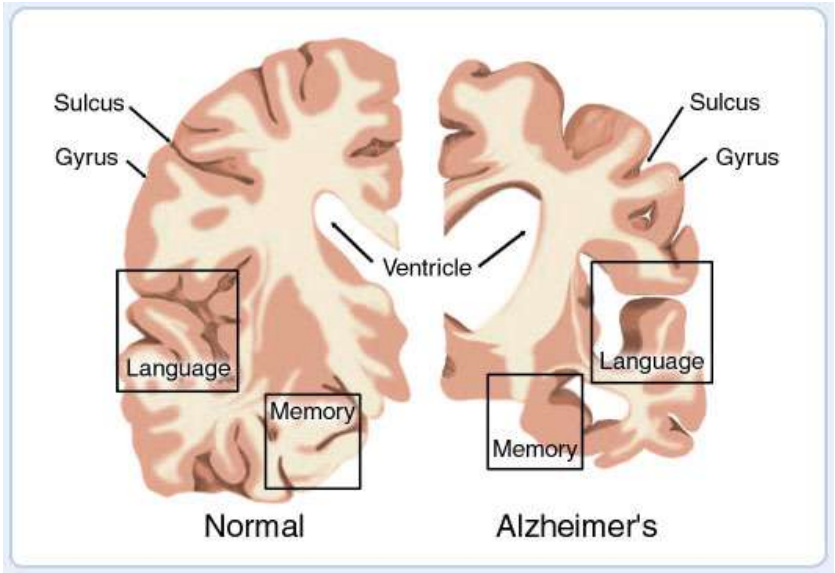
Cancer prophylactic

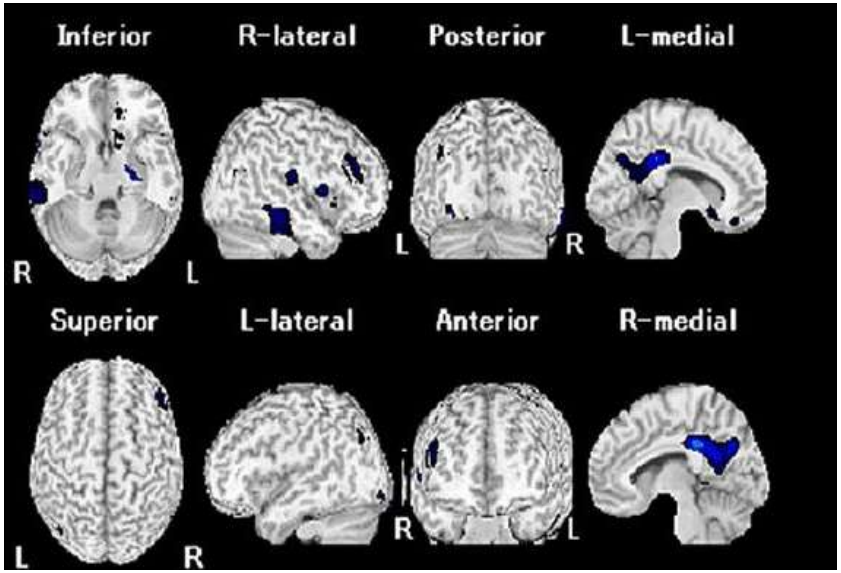
Anti-cancer activity is reported for the following cancers:

- Colon
- Prostate
- Gastric/stomach
- Breast
- Skin

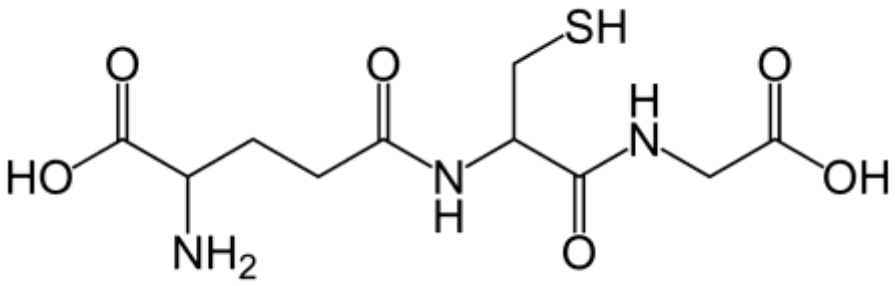


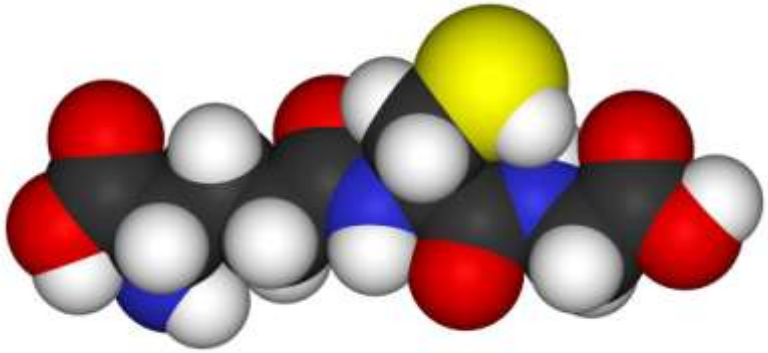
Alzheimer's Disease Prevention

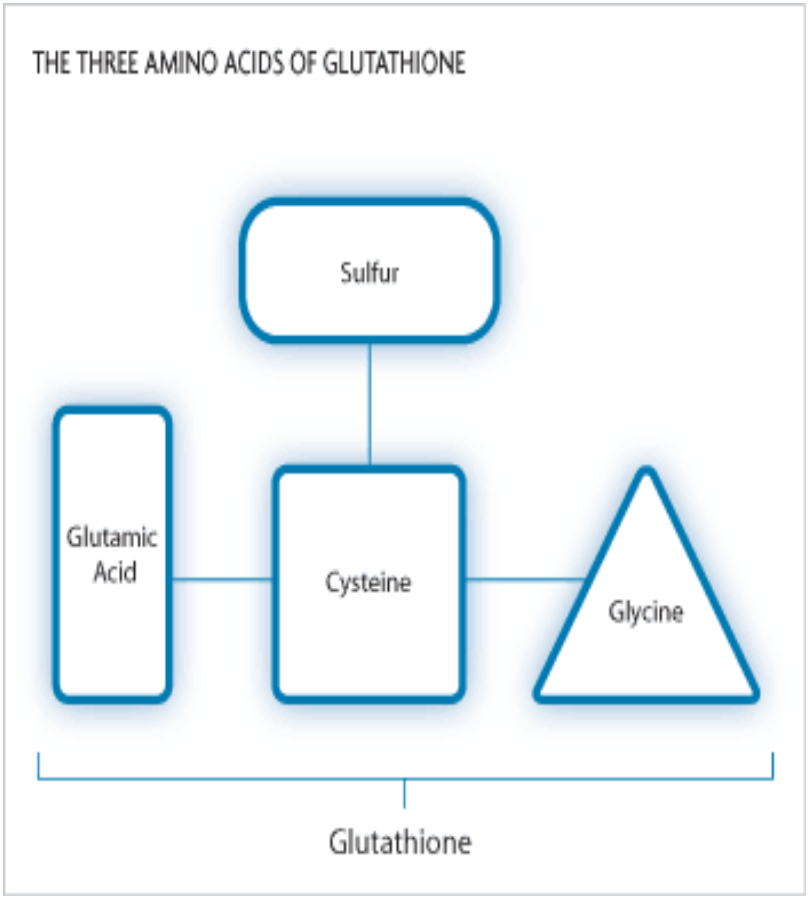




Priceless Glutathione

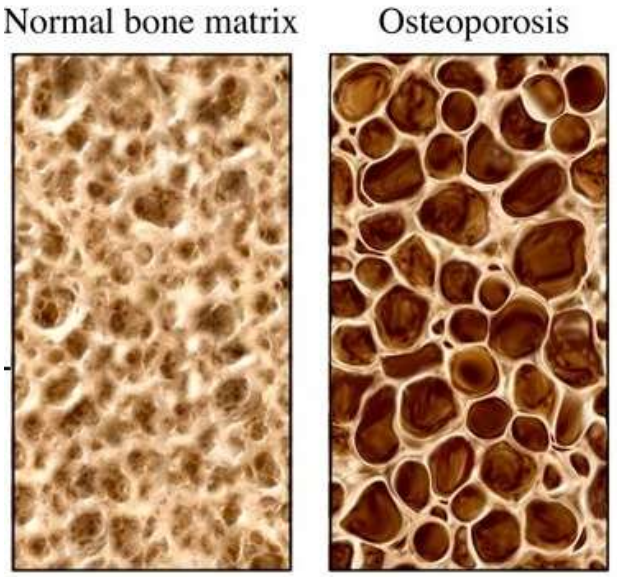






Osteoporosis Prevention

Treasure your Bones!




MULTIPOWER
MUSCLE
PREMIUM TASTE
55g PROTEIN SHAKE
VANILLA
PROTEIN SHAKE
RECOVERY DRINK

Whey Proteins in Sport Nutrition

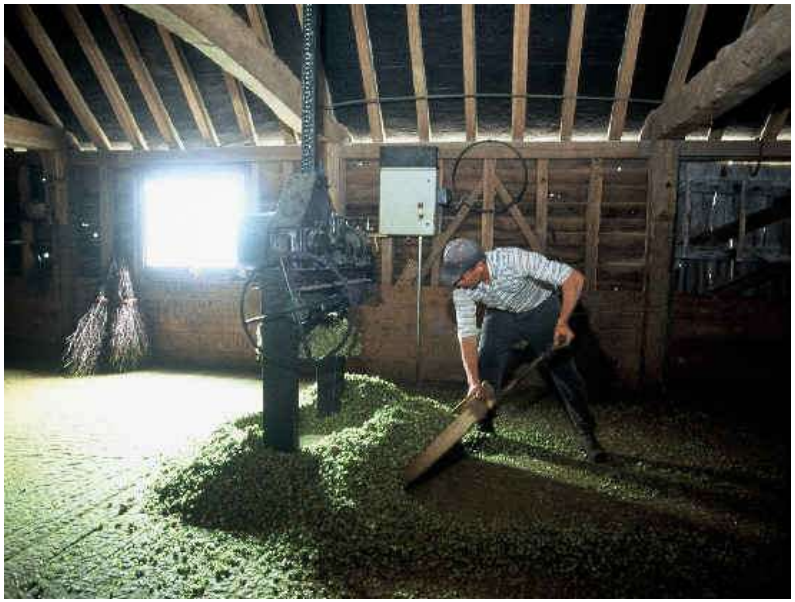
- Whey proteins are easily digested and absorbed to build body structural proteins
- Essential amino acids promote muscle hypertrophy to maximize physical performance (an increase in muscle fiber size)
- Whey proteins are the richest source of leucine. This branched chain amino acid stimulates new muscle protein synthesis and inhibit muscle protein degradation after resistance exercise
- Increasing skeletal muscle and decreasing body fat

If You'd Like to Learn More About Whey Proteins…

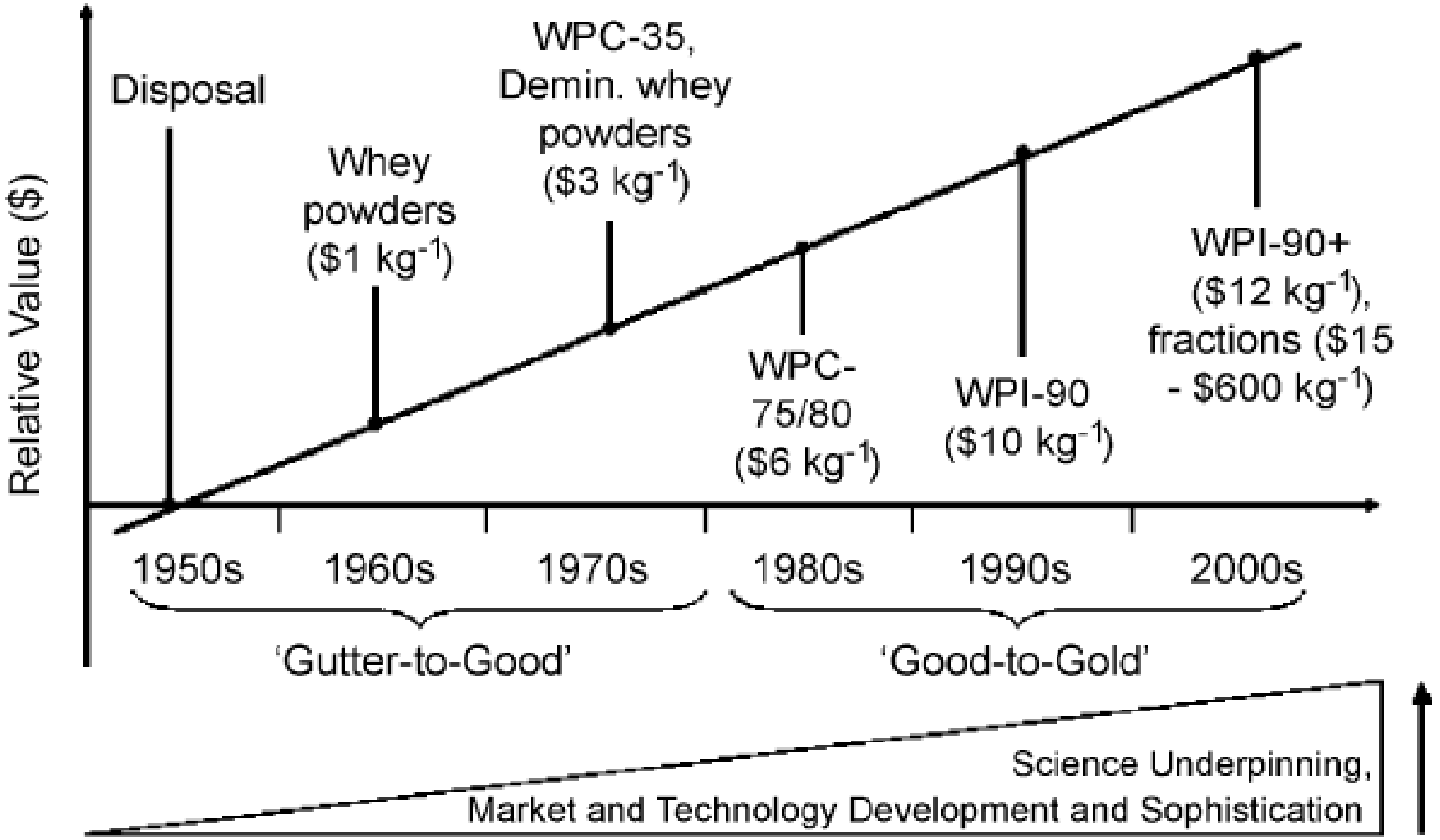
New Formulas for Babies

- Are made with a combination of whey and casein proteins, like breastmilk
- Whey protein will increase and improve the development of the baby
- Each Infant formula is made with a specific composition, ingredient list, and benefits depending on your baby's normal growth and development

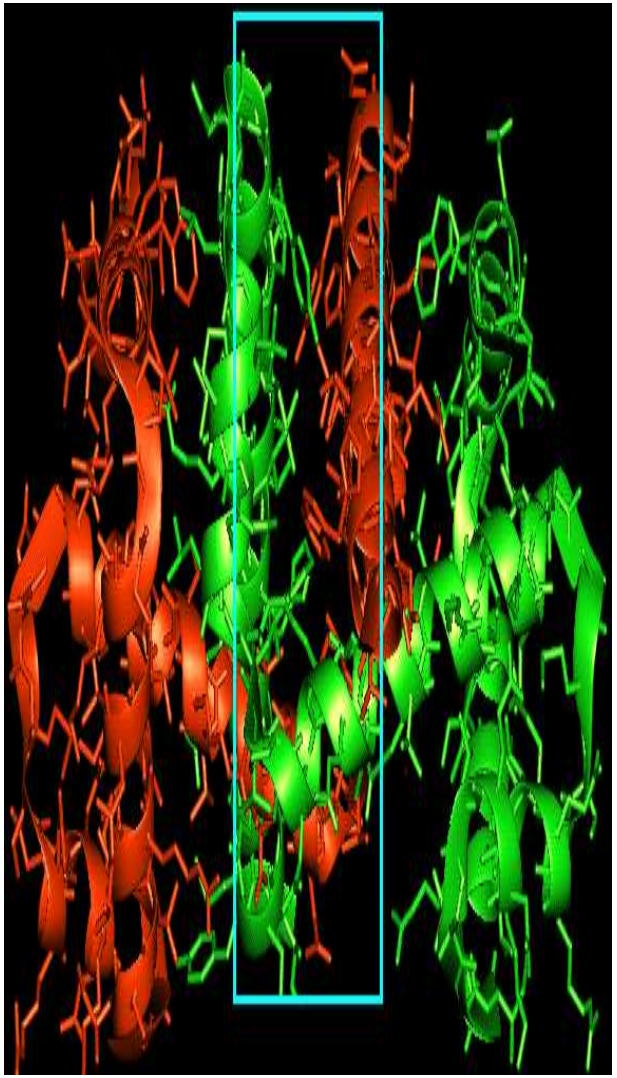
Ecological Plant Protection

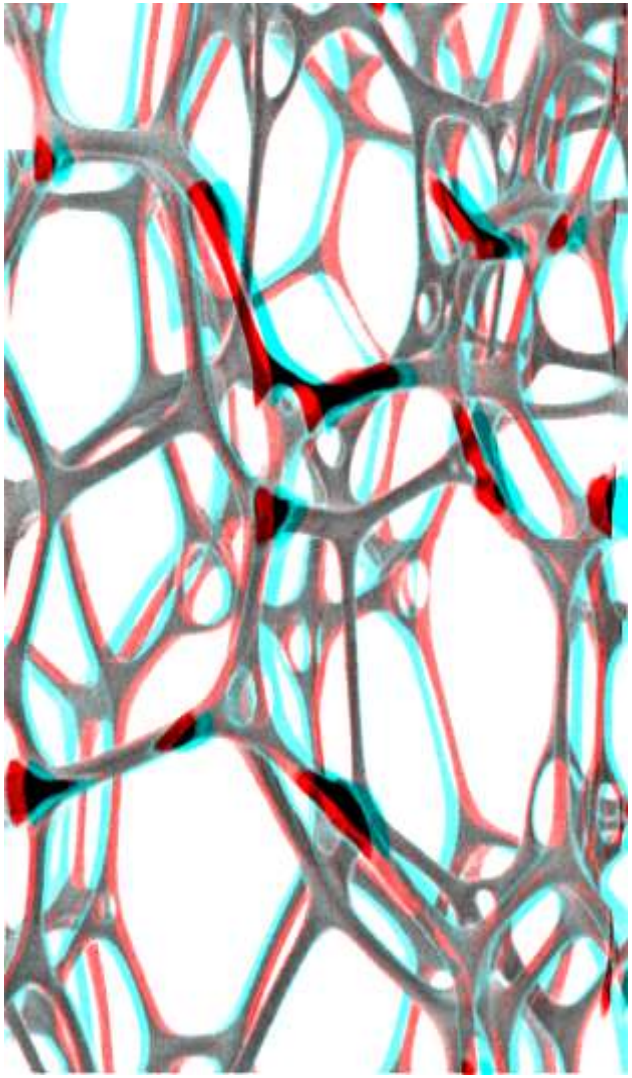


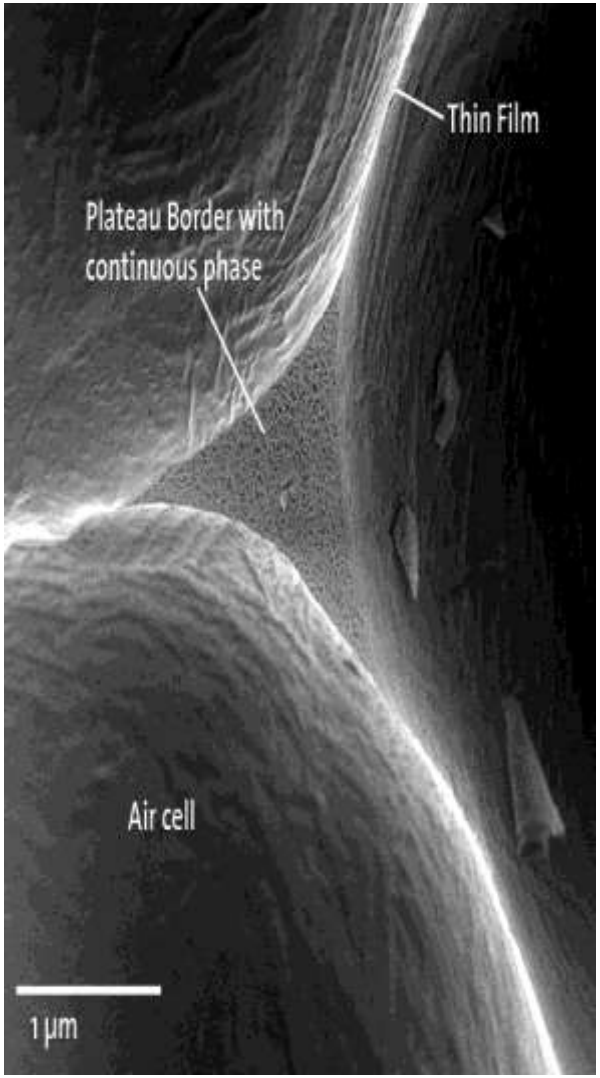
This How Whey Value Grew Over the Years



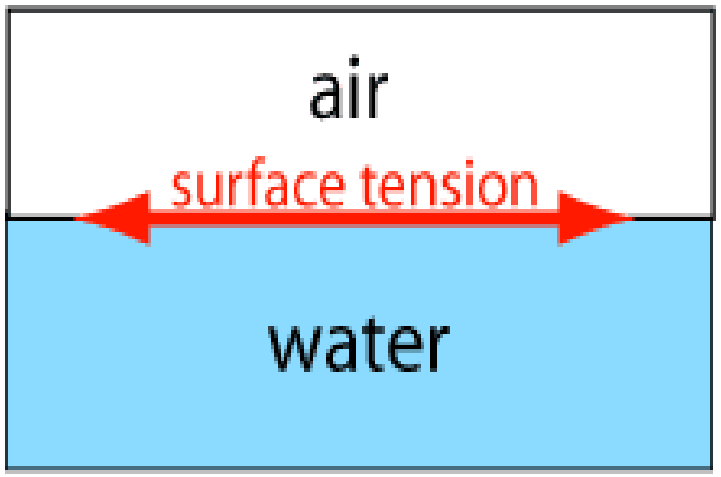
Protein Foams

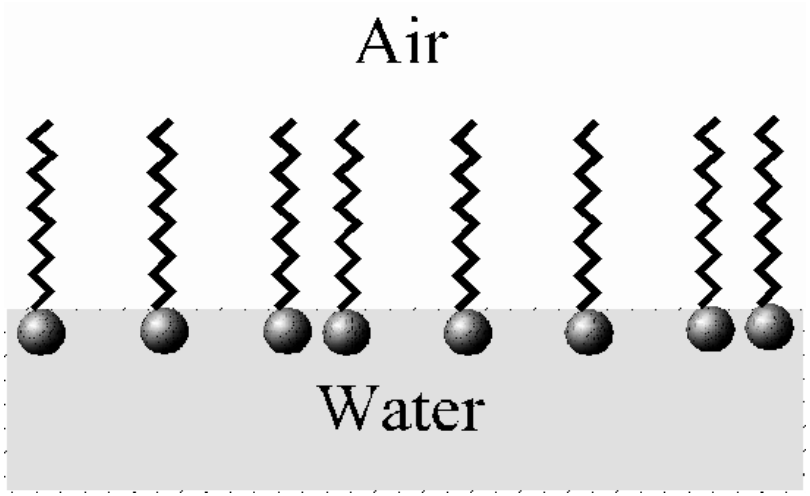


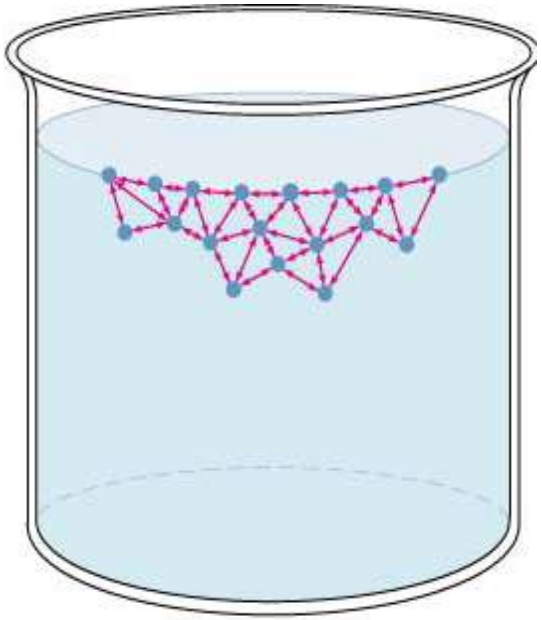




Chemical basis of foaming process



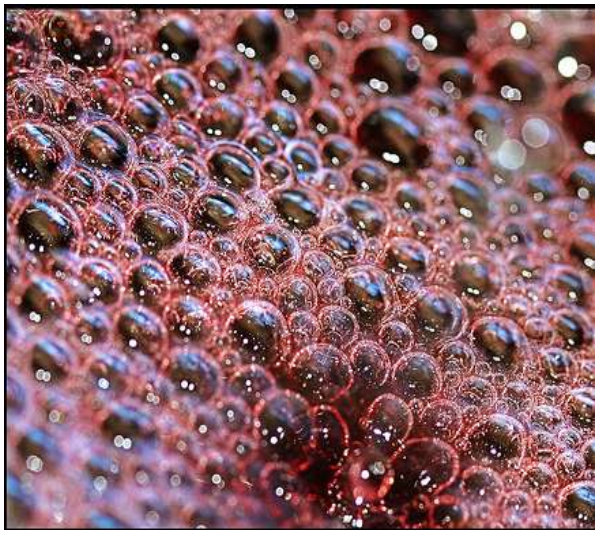


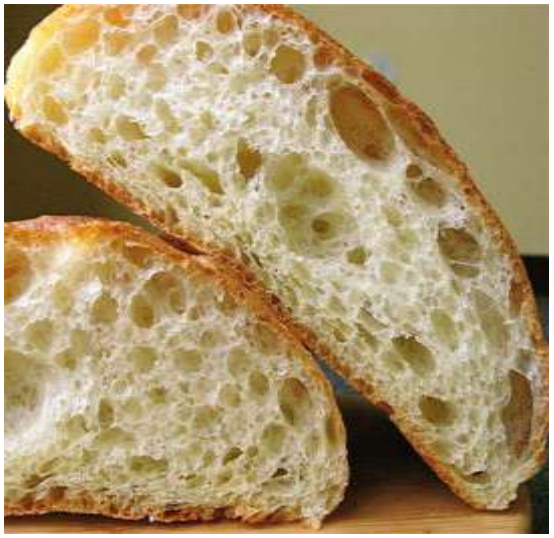


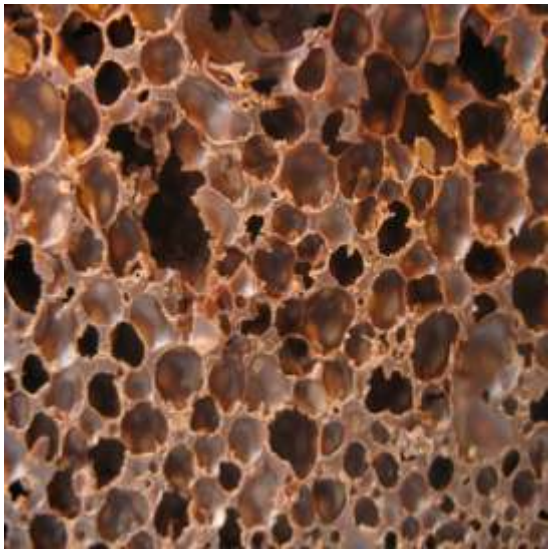
Egg albumin

- exhibits unpleasant taste and flavour
- may cause technological problems, mostly that of microbial nature
- inferior biological value (~ 100) than for example whey protein isolate (~159)
- overbeating effect
- contains high levels of avidin, a protein that binds the biotin strongly (vitamin H deficiency)
- not satisfactory water solubility over wide pH range

Bubbles in food





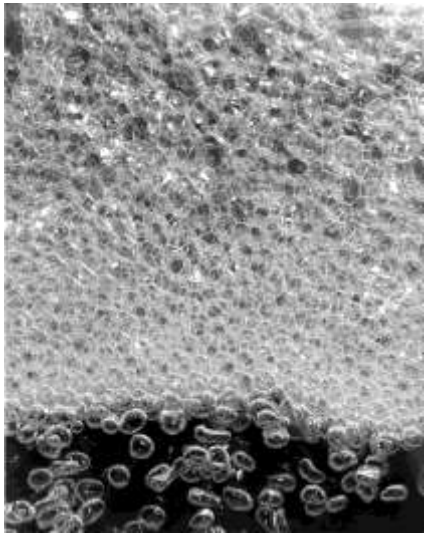


Whey proteins as a foaming agent

- **Whey proteins have an exceptional biological value (BV), that exceeds that of egg protein by about 15%, the former benchmark, and a range of other common edible proteins**

- **Excellent, natural taste**

- **Due to economical and ecological reasons, the application of whey (by-product) is fully justified**



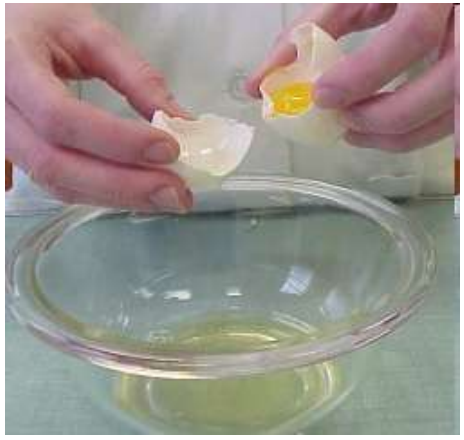
- **Food processers would like to have wide range of ingredients to choose from, so substitution of egg albumin for milk, especially with whey proteins is definitely in their interest**

What is meringue?

- **Meringue is a type of dessert made from whipped egg whites and powdered sugar**
- **A meringue is really nothing, but a foam, and foam is a big collection of bubbles**
- **Very light, airy and sweet**

Making Perfect Meringue

- Crack the eggs and separate yolks from egg whites
- Egg white beating
- Beat egg whites to soft-peak stage
- Add the sugar gradually (1/4 cup of sugar for each egg white)
- Baking of meringues (Bake at 150°C degrees for 20 to 30 minutes
- Storing of meringues (room temperature)



New Product Properties

- Mouthfeel
- High protein content
- Very long expiration date
- Very low lactose content
- Appearance
- Ready to eat
- Rheological properties

Protein shake

- **Pros:**
- **Perfect meal supplement or meal replacement**
- **Very easy to prepare**
- **Cons**
- **Thermodynamically unstable**
- **Drink after use**

Materials

- Whey Protein Isolate (> 90 % protein)
- When Protein Concentrate (~ 80 % protein)
- Saccharose

Nutrition Facts
Valeur nutritive
Per serving (35 g) / par mesure (35 g)

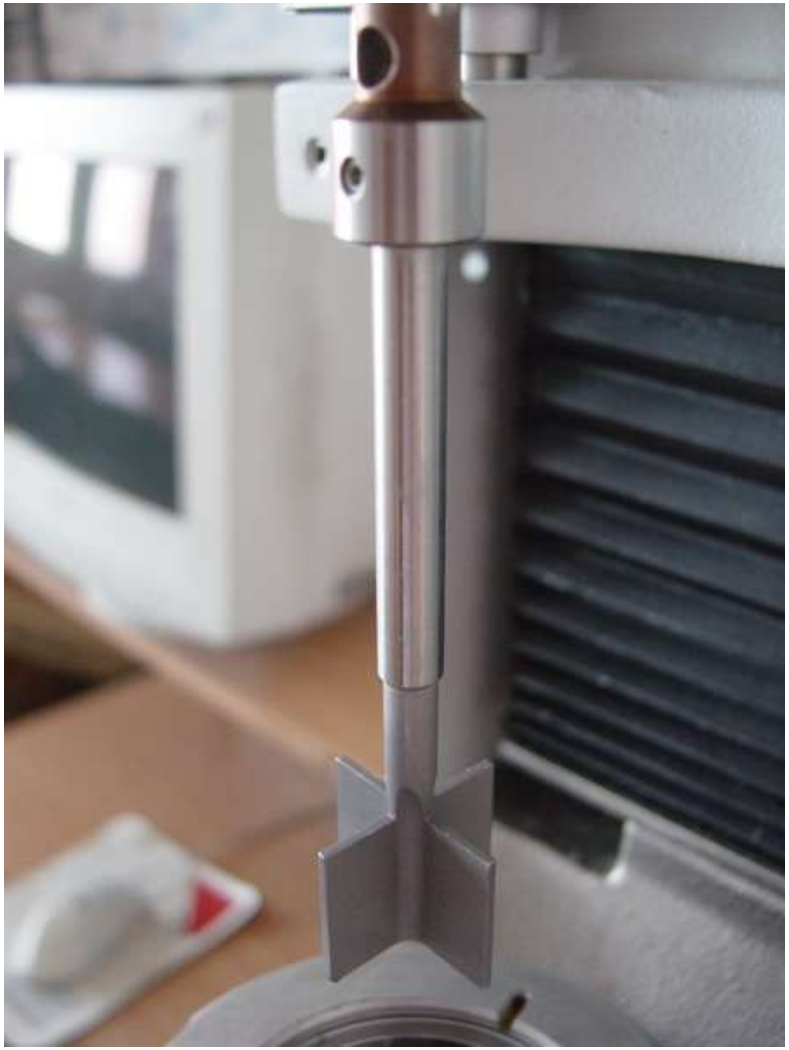
Amount / Teneur	% Daily Value / % valeur quotidienne
Calories / Calories 140	
Fat / Lipides 2 g	**3** %
Saturated / saturés 0 g	**0** %
+Trans / trans 0 g	**0** %
Cholesterol / Cholestérol 40 mg	**13** %
Sodium / Sodium 58 mg	**2** %
Potassium / Potassium 116 mg	**3** %
Carbohydrate / Glucides 5 g	**2** %
Fibre / Fibres 0 g	**0** %
Sugars / Sucres 2 g	
Protein / Protéines 25 g	
Vitamin A / Vitamine A	**0** %
Vitamin C / Vitamine C	**0** %
Calcium / Calcium	**16** %
Iron / Fer	**2** %
Other Ingredients/ Autres ingrédients:	
Acesulfame Postassium	53 mg
Sucralose	3 mg

Nutrition Facts
Valeur nutritive
Per 32 g (1 Scoop) serving
Par portion de 32 g (1 Mesure)
Portions par contenant **71** Servings per container

Amount / Teneur	% Daily Value / % Valeur Quotidienne
Calories / Calories 128	
Fat / Lipides 2 g	**3 %**
Saturated / Saturés 1 g +Trans / Trans 0 g	**5 %**
Cholesterol / Cholestérol 27 mg	
Sodium / Sodium 105 mg	**4 %**
Potassium / Potassium 133 mg	**4 %**
Carbohydrate / Glucides 3 g	**1 %**
Fibre / Fibres 0 g	**0 %**
Sugars / Sucres 1 g	
Protein / Protéine 23 g	BeFit.ca
Vitamin A / Vitamine A	3 %
Vitamin C / Vitamine C	1 %
Calcium / Calcium	19 %
Iron / Fer	0 %

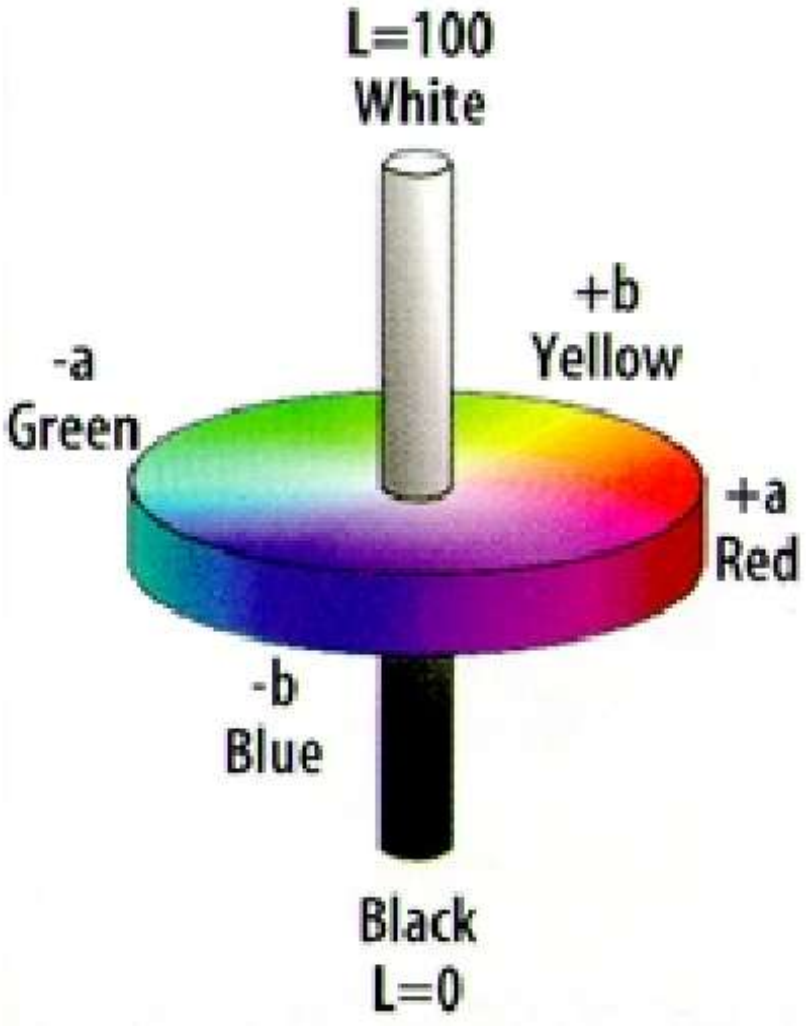
Other Ingredients / Autres Ingrédients
Sucralose 50 mg
L-Glutamine HCl 440 mg

Rheological Evaluation

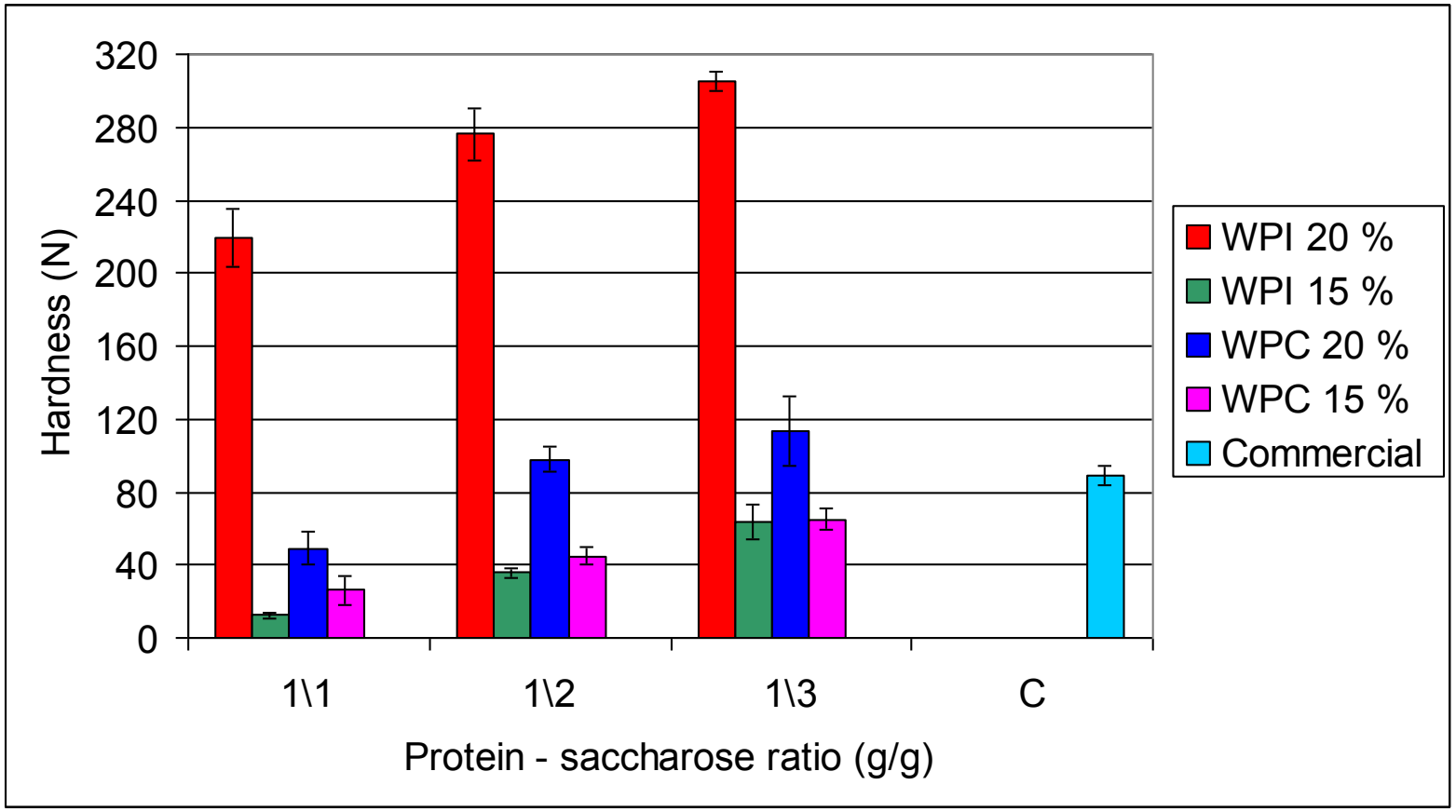


Texture Profile Analisys

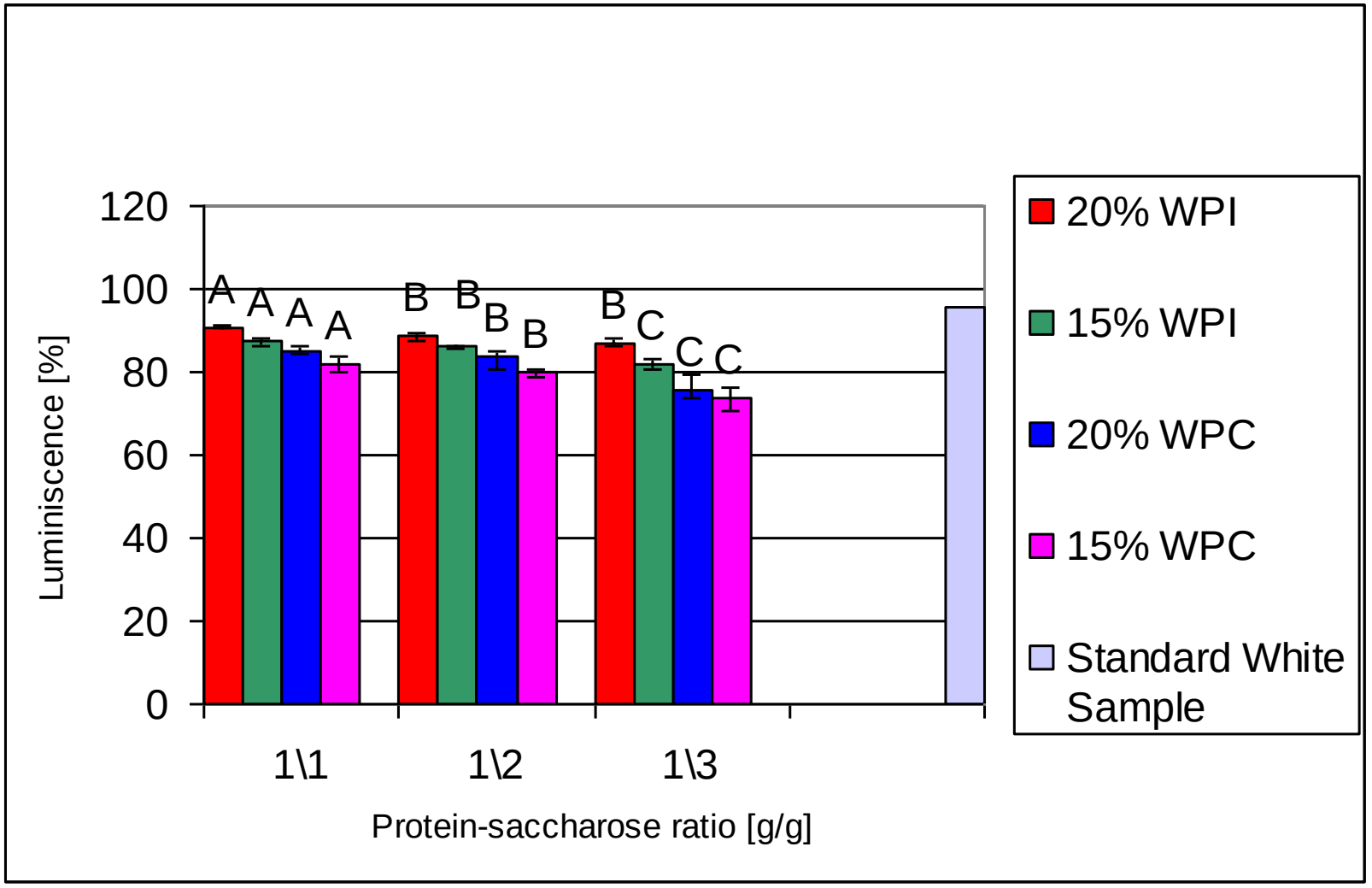
Color Analysis



The Effect of the Preparation Type, Its Concentration and Sugar Addition on Hardness of Whey Protein Meringues

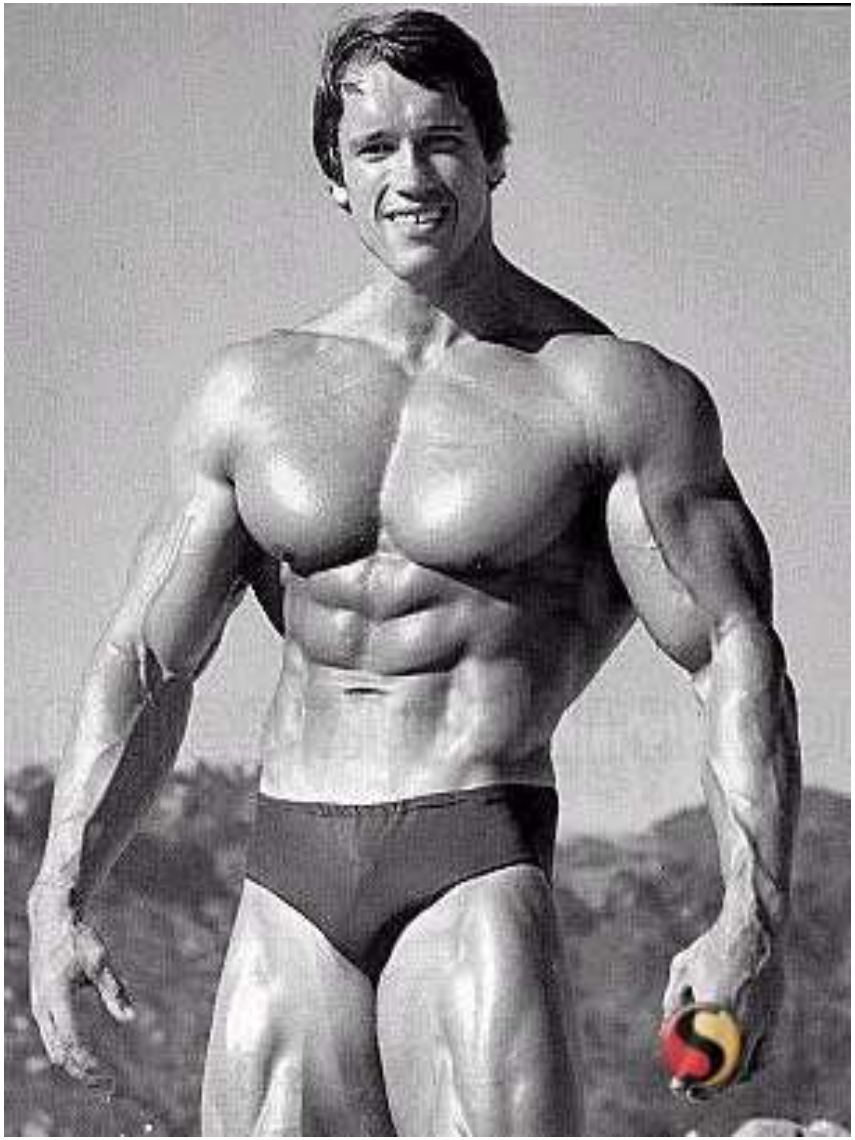


The Effect of the Preparation Type, Its Concentration and Sugar Addition on Luminiscence of Whey Protein Meringues



Future Perspectives

- Partial of total sugar elimination (empty calorie carrier)
- Product will be directed to specyfic group – proffessional bodybuilders and active people



Brief Conclusions

- **Concentrations of protein, saccharose and protein preparate type significantly determine the mechanical properties of produced meringues**
- **The effect of ingredients in meringue production will allow to control the texture and the colour of obtained product**

Thank You For Your Attention ☺