

# PROTEIN ADDITIVES FOR MEAT PRODUCTS: FUNCTIONAL PROPERTIES

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## INTRODUCTION

Protein additives have found wide applications as substitutes and functional ingredients in most food. Having unique nutritional properties they provide an opportunity to improve emulsions and their stability, to reduce content of free liquids during thermal process, to form better products texture and sliceability.

To create the new recipes and technology of low - fat meat products the investigation of protein additives functional properties is especially important.

The water and fat binding are functional properties that may be one of the major characteristics to select correct protein additives for different groups of meat products.

**AIM** - comparable studies of functional properties: water and fat binding of protein additives.

## OBJECTS

Dry protein additives collected from Lithuania food industry:

- soy isolate *Supro 500 E* ( Soy I/S ), *Purina 500 E* ( Soy I/P ) - made in USA,
- soy concentrate *Danprotex H -40* ( Soy C/H40 ), *Danprotex H -47* ( Soy C/H47 ), *Danprotex B -50* ( Soy C/B50 ), *Danpro H* ( Soy C/H ) - made in Denmark,
- sunflower protein ( SP ) - made in Ukraine,
- sodium caseinate ( SC/E ) - made in Estonia, sodium caseinate ( SC/L ) - made in Lithuanian,
- whey protein concentrate ( WPC/E ) - made in Estonia, whey protein concentrate ( WPC/L ) - made in Lithuania,
- rind protein *Drinde 1015/F* ( RP/1015/F ), *Drinde R-95* ( RP/R95 ), *Drinde T-95* ( RP/T95 ) - made in Denmark,
- dry lightened blood ( DLB ) - made in Lithuania,
- dry protein mixture: 1 part lighten blood and 1 part of skimmed milk ( DPM ) - made in Lithuania.

**METHODS** - Water and fat binding were established by method of centrifugation (  $n = 3600 \text{ min}^{-1}$  ) according to content of free liquid.

## RESULTS

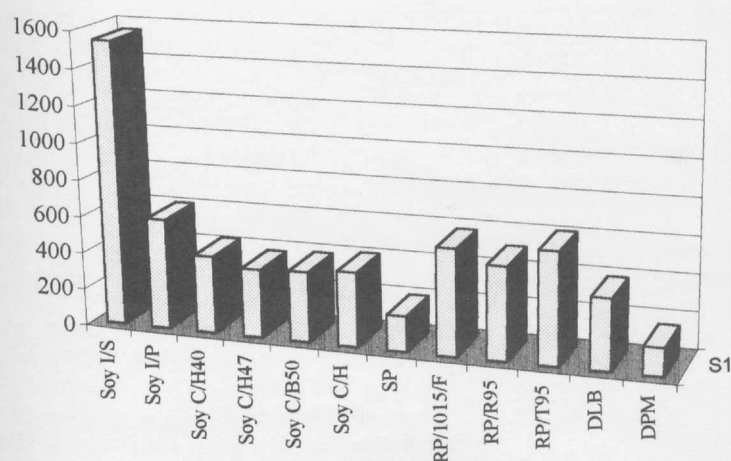


Figure 1. Protein additives water binding capacity, %

In addition to the water naturally present in meat a considerable amount of water is also added to the frankfurter-type sausage and cooked ham. These large quantities of water are bound by the meat and non - meat proteins and this underlines the products yield, texture and juiciness.

From the Fig. 1 it is seen that soy isolate *Supro 500 E* showed the best water binding capacity (till 1550 %). For other protein additives this functional property not excess 600 % and depends on the type of primary material and processing.

Protein additives also effect meat emulsions and their stability. Because of high fat binding capacity non - meat protein may reduce the free fat content in finished products. A comparison of fat binding capacity of various protein additives is shown in Fig. 2. Soy isolate *Supro 500 E* and sodium caseinate ( Estonia ) bound similar content of fat. Not far are soy isolate *Purina 500 E*, whey concentrates, rind protein *Drinde T-95* and blood proteins. It is seen that these additives are more suitable in product with increased level of fat.

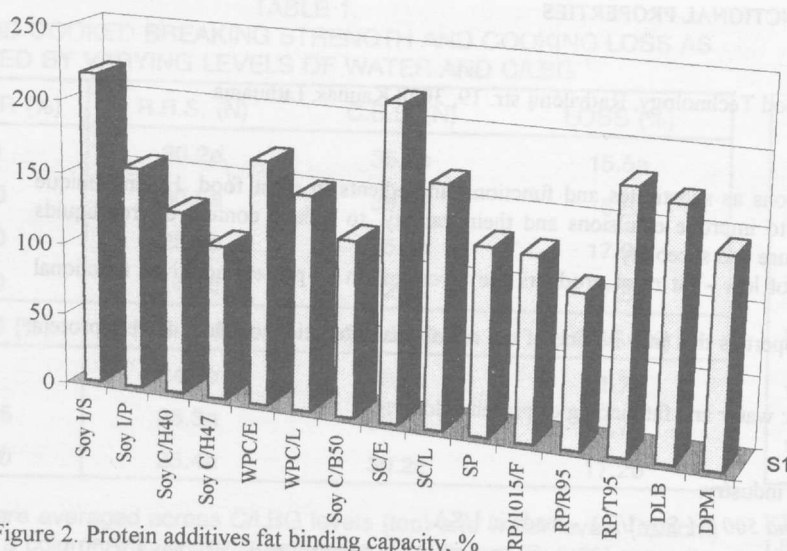


Figure 2. Protein additives fat binding capacity, %

#### CONCLUSIONS

It was found that functional properties of protein additives depend as on their origin as on method of processing, also. Soy isolate *Supro 500 E* showed the better functional properties than *Purine 500 E*, Estonian sodium caseinate and whey concentrate - than Lithuanian ones.

Analyses of functional properties of protein additives allow to predict their interaction with other components of meat system and find out the technology of combined products.

#### REFERENCES

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