

### Effect of dried barley spent grains on the quality of deli-type chicken meat product

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**Introduction:** Barley spent grains (BSG), a main side-stream material in beer technology, is rich in fiber, phenolic compounds, vitamins and minerals. BSG is a promising and valuable raw material for further food applications but only when quickly processed, a.o. by drying, to avoid fermentation and microbial spoilage. BSG can be utilized in deli-type meat products, such as pates, but the technological process has to be optimized in order to create a high quality innovative and sensory attractive product. Deli-type meat products are one of the most dynamically developing meat industry sectors, mostly due to high level of convenience, easiness and availability. The combination of a fiber-rich material with meat can result in a higher quality and sensory attractiveness, as well as increased healthiness of the assortment. The aim of the study was to develop a deli-type product based on chicken meat and dried BSG with the high quality, including sensory attributes, and shelf-life.

**Materials and methods:** Deli-type meat product was created by homogenization of chicken meat, skin and liver together with semolina, salt and spices. Barley spent grains preparation (particle size <350 µm with bulk density 0.39-0.49 g/ml and ability to bind oil 1.9-2.2 g and water from 3.0 to 4.3 mL water/g sample) was added in quantity between 0% (control) and 10% (ten variants) in screening study, then variants with 0; 1.5; 2.5; 3.5 and 5% BSG addition were selected and tested in the main study. Thermally treated products were subjected to proximate, pH, color, texture profile (ZwickRoel Z010), TBARS, sensory and microbiology analyses after 1,7,14 and 21 days of storage at 4°C.

**Results:** The screening study showed that the addition of barley spent grains higher than 5.0% significantly ( $p < 0.05$ ) changed the color, especially parameters  $L^*$  (lightness) and  $b^*$  (yellowness) of the chicken meat deli-type product, which negatively affected the product sensory acceptance in case of color and appearance, as well as taste and texture. The results from the main experiment revealed that the BSG addition higher than 3.5% increased ash content in the deli-type products. Significant differences were noted for the color parameters between control and experimental samples, which were characterized by lower lightness (47 to 37 for control and 5% BSG). Application of BSG to deli-type chicken product resulted in stable redness ( $a^*$ ) over the whole storage time, as well as higher consumer acceptability (3.30 for control and 3.7-4.0 for 5%-2.5% and 3.5% respectively). Deli-type chicken meat products manufactured with BSG were also more oxidatively and microbiologically stable during storage, which could be connected with lower water activity of the products.

**Conclusions:** Summing up, it could be stated that BSG up to 3.5% can be successfully applied to deli-type products from chicken meat without any deteriorative effects in quality and sensory acceptability. BSG is able to stabilize deli-type chicken products during storage.

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