

## Examiner's report on the PhD Thesis:

### „The study of functional ingredients from corn silk“

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PhD Thesis submitted by MAg. Peng is dealing with the physico-chemical and biochemical properties of the bioactive components extracted from corn silk. The main areas of research conducted during the PhD study include: (i) corn silk flavonoids, polysaccharides and steroids investigated using a variety of analytical and physical techniques. Another research area is related to (ii) evaluation of physicochemical properties of corn silk (thermal analysis). The last topic studied within the PhD study covers (iii) antioxidant/radical scavenging activity of all three main components of corn silk.

The Thesis is written in the range of 99 pages and has a standard structure. Current state of the main studied topics (4 pages) is written concisely and covers the technology of corn silk bioactive ingredients extraction. Objectives of the PhD Thesis describe the most important issues intended to study. Chapter Materials and Methods discusses in details physicochemical analysis, extraction methods, methods related to determination of content, evaluation of biochemical properties and tests used for *in vitro* enzyme inhibition. The most comprehensive is chapter Results and discussion (46 pages). The last chapters of the PhD Thesis include Conclusions and Benefits for the subject study.

The most important results achieved in course of the PhD study can be summarized as follows:

Author studied using a variety of experimental techniques physicochemical and biochemical properties of corn silk fibers and powder in three different maturity stages. Several important flavonoids, polysaccharides and steroids have been extracted, including epicatechin, caffeic acid, vanillic acid and other components. Thermal methods, EPR and radical scavenging assays have been applied to study efficiency of the studied systems to scavenge free radicals. It has been proved that CS-MS extracts have most significant radical scavenging activity, followed by CS-S extracts and finally weakest

activity has been obtained for CS-M extracts. CS polysaccharides have most profound antidiabetic and anticoagulation and antihypertension properties. Obtained results represent a complex study from both nutritional and pharmaceutical points of view.

The obtained results are original and resulted in publication of **several papers in renowned peer-reviewed journals** such as LWT-Food Science and Technology, Chemické Listy and other journals.

The following questions can be considered as topics for the discussion at the Thesis defence:

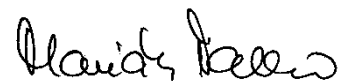
1. Where do you see the perspectives of the application of the extracts from the corn silk as most promising?
2. Do the high doses of the corn silk extract may have any detrimental effects on the health?

**Overall assessment:**

My **overall view** of the PhD Thesis is that it is **substantial and very well-presented**. The results obtained are original and led to the publication of several papers in esteemed scientific journals.

I am convinced that the scientific results presented in the Thesis represent a **significant original contribution** to the subject area and I am pleased to recommend that the PhD Thesis submitted by **MAgr. Li Peng** after successful defence will be the basis

**for the award of PhD** in Degree Program: **P2901 Chemistry and Food Technology**



Bratislava, 19.10.2020

Marián Valko