**AESCULUS HIPPOCASTANUM extract as a potential antibacterial emulsion stabilizer**

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Saponin containing plant extracts are interesting from the point of view of their surface-active properties. In this paper, the investigations of *A. hippocastanum* L. bark extract as a potential antibacterial emulsion stabilizer are presented. The tested crude extract of *A. hippocastanum* L. contained 4.7 % saponins, which are considered as the main group of extract components responsible for its surface-active properties. The content of saponins in *A. hippocastanum* L. extract is significant, however it is relatively lower in comparison with another plant extract such as *Saponaria officinalis* L. [1]. Two series of plant extracts were produced: the first one (called later crude) was obtained after extraction procedure, the second one obtained by filtration of crude extract through a syringe filter (c.a. 200 nm). The size of the filtered extract particles was determined by dynamic light scattering (DLS). First results showed that measured critical micelles concentration (CMC) of *A. hippocastanum* L. crude extract is several times higher than the values of this parameter for synthetic surfactants such as Brij 35 or Triton X-100.

From the point of view of a potential use in the food industry, the preservation of an emulsion from microbial activity plays a key role. For that reason, we selected few environmental bacterial strains to evaluate the potential antimicrobial activity of *A. hippocastanum* L. Our results confirmed toxic impact of the tested plant extract on environmental bacterial strains. The toxicity tests were evaluated by cell metabolic activity measurements. It was assumed that cell metabolic activity in samples without *A. hippocastanum* L. extract was equal to100% for each strain. At the concentration near the CMC value cell metabolic activity decreased for all strains (excl. *Achromobacter* sp. KW1). At the highest used concentration (the tripled CMC value) the metabolic activity was lowered to 3% (for *Pseudomonas* sp. MChB) and to 73% (for *R. planticola* WS2).

The presented results are the first step to evaluate the plant extracts according to their basic properties in the context of the particle size. *A. hippocastanum* L. extract is interesting from the point of view saponins content as a potential emulsion stabilizer. What is more, the basic toxicity test shows that *A. hippocastanum* L. extracts might be considered as potential preservation agent in a food industry or packaging systems.

References:

[1] Smułek W. et al. (2017), Saponaria officinalis L. extract: Surface active properties and impact on environmental bacterial strains. *Colloids Surf B Biointerfaces*.150, pp. 209-215