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Assessment of microbiological quality and safety of marinated pork products from German retail during shelf life

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1 Assessment of microbiological quality and safety of marinated pork products from German
2 retail during shelf life

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13

14 **Abstract**

15 Foodborne diseases are of major concern for public health. Here we assess the
16 microbiological quality and safety of marinated pork steaks (n=300) and marinades (n=30)
17 which were used for the production of marinated steaks by analyzing quantitative
18 microbiological parameters and foodborne pathogens. *Salmonella* spp. and *Listeria*
19 *monocytogenes* were isolated from about 2 %, *Staphylococcus aureus* from 8 % and *Bacillus*
20 *cereus* from 21 % of the steaks. One steak was MRSA-positive and one contained
21 EHEC/STEC. *Bacillus cereus* was the only pathogen detected in the marinades. Similar toxin
22 patterns of *B. cereus* strains from meat and marinades suggested that a contamination of
23 meat with *B. cereus* occurred via marinades.

24

25 **Keywords:** marinated meat; consumer protection; microbiological criteria; virulence factor;
26 toxigenicity; pathogen;

27

28 **1. Introduction**

29 Food borne infections are of major concern for public health and cause substantial costs
30 (Hoffmann et al., 2012), despite of reinforced actions by governments and food industry for
31 better food hygiene. Changing lifestyles might contribute to this situation, such as the rise of
32 single-households possibly accompanied by a decreasing knowledge of proper food handling
33 and a growing demand for convenience food (Brunner et al., 2010).

34 Amongst the category of convenience food, pre-packed marinated meat products such as
35 steaks, spare ribs and filets are becoming increasingly popular (O'Donnell, 2004; ZMP, 2007).
36 In Germany, about 400,000 tons of barbecue products from pork, beef and chicken were sold
37 during the barbecue season in 2007. Within this section of meat products, marinated pork
38 neck steaks are the most popular (ZMP, 2007). In Germany, marinated pork neck steaks are
39 produced usually from frozen pork necks with industrial marinade. Minimum shelf life, as
40 assigned by producers, ranges from 13 to 18 days.

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