

BILAT CHINA (Call' 010) PROJECTFICHE "SHELFISH"

Detection of Infectious Noroviruses in Shellfish and Anti-viral Potential Study of Seafood

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CO-OPERATION PARTNERS

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FRAMEWORK AND SIGNIFICANCE OF THE PROJECT

- **Detection of Noroviruses (NoVs) in popular shellfish species in Belgium and China using binding RT-PCR.** To our knowledge, this would be the first time to evaluate the infectious NoVs contamination in commercial shellfish.

- **Identification and function study of novel anti-NoVs components from potential functional seafoods.** Currently, anti-viral activities of compounds isolated from natural products have already been reported towards several severe pathogenic viruses. However, anti-NoVs effects of natural specific seafood products are hardly investigated. In this study, the anti-NoV effects of compounds isolated from seafood are to be investigated.

SPECIFIC TASKS

1. Monthly sample collection and screening. Shellfish samples belonging to different categories (oysters and mussels included) will be collected from Belgium and China. NoVs will be extracted from dissected digestive tissues of shellfish using the standard method of Europe. As a validation of this new binding RT-PCR technique to specifically distinguish presence of infectious NoV, the detection result of binding based RT-PCR will be compared with traditional RT-PCR. If positive results are obtained and contamination with viral strains with a high contamination level are identified it will be attempted to genotype these viral strains by DNA sequencing. Also during analysis, in parallel to infectious NoV detection, overall hygiene indicators E.coli and bacteriophages will be analysed in order to investigate their potential to be used as NoVs contamination indicators.

2. Anti-NoVs study of compounds from sea food. In the first stage, the preliminary screening of anti-viral products will be performed by using murine norovirus (MNV-1). MNV-1 is the most related NoV strain to the human NoVs that can be cultivated in the laboratory. In the second stage, the key results obtained using MNV-1 will be confirmed by using human NoVs isolated from faecal samples of NoVs infected patients. Finally, to judge the potential practical application as a preservative or additional hurdle factor to contribute to inactivate infectious NoV in foods the anti-viral effect of some selected promising seafood extracts will be further investigated for their antiviral activity to NoV in the presence of a food matrix.