INTRODUCTION

The decomposition process is affected by many factors: method and time of burial, corpse-specific characteristics (weight, sex, age, cause of death,...) and conditions of the resting place (temperature, pH, insect and carnivore activity, moisture, soil type,...) [1]. Microbiology plays a major role in decomposition: protozoa, fungi, aerobic and anaerobic bacteria are involved [2].

Degradation starts approximately 4 minutes after death and begins with autolysis, the breakdown of tissue by the body’s own internal chemicals and enzymes (fig.1B) [2]. The second stage of decomposition, putrefaction, is characterized by the destruction of soft tissue by anaerobic microorganisms. During putrefaction several gases (H₂S, CO₂, CH₄, SO₂, NH₃, H₂S,...) are produced causing bloating of the body (fig.1C) [2]). Next, the active decay begins: the breakdown of muscle, carbohydrates and fat results in degradation products of which some are considered significant during decomposition like indole, skatole, cadaverine, putrescine and various fatty acids (fig.1D,E) [2]). In this phase formation of a grayish soap-like substance, adipocere or grave wax is observed under certain circumstances. Adipocere is formed by alteration of body fat into an insoluble lipid mixture which mainly consists of saturated fatty acids and inhibits cadaver decomposition [3]. However, this phenomenon is not fully understood yet. The final stage in decomposition is diagenesis: the decomposition of the bone [2]

The four stages described here are not necessary present or may take place at the same time. Therefore, decomposition could also be segregated into pre- and post-skeletonization [2].

SUMMARY

During the breakdown of soft tissues of the body different gases, liquids and simple molecules are produced. Identification of decomposition-specific substances would be promising for forensic investigations. Moreover, this project intends to identify postmortem biomarkers specific for humans in order to differentiate buried species.

REFERENCES