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nitrate reduction (DNRA) to ammonium is a microbial enzymatic process of nitrate transformation into ammonium via nitrite (Cole and Brown, 1980; Cole, 1990) and could be performed by different group of bacteria: obligatory anaerobes, facultative anaerobes and aerobes. It was demonstrated that DNRA was favored at intensively reduced and C-rich soils (Tiedje, 1988; Schmidt et al., 2011). Since N_2O production was found during DNRA (Baggs, 2011), hypothetically nitric oxide could be produced as an obligatory precursor (Russow et al., 2009), but nothing was reported until present time. Urgent and intensively investigations of DNRA as a potential process for NO production/emission are needed to estimate rate of this process.

The detailed discussion of these findings point and demonstrate undiscovered, poorly investigated issues, regarding NO production, which urgently should be taken into account and investigated.

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THE ROLE OF NITRIFICATION AND DENITRIFICATION IN SOIL NITRIC OXIDE PRODUCTION

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Nitric oxide is highly reactive compound in near ground atmosphere (Fowler et al., 2009) and is considered as the main precursor of tropospheric ozone in rural areas (Cameides et al., 1994; Laville et al., 2011).

The main purpose of our survey study is an understanding of NO production/emission mechanisms in soils allow to develop the mitigation strategy for its reduction, leading to O_3 level declining. Published data were obtained using Web of Knowledge and Google Scholar research article data bases.

The basic soil biological N transformation processes could be considered as potential sourced of NO productions. Nitrification is stepwise conversion of NH_4^+ via hydroxylamine (HA) into NO_2^- and to final product – NO_3^- (Zumft, 1997; Wrage et al., 2001). NO production is considered as an intermediate in a step of HA transformation into NO_2^- (Hooper and Terry, 1979; Ludwig et al., 2001). Nitrification is affected by NH_4^+ availability, soil O_2 level, soil moisture content, pH and temperature (e. g. Zumft et al., 1997; Ludwig et al., 2001). Significance of nitrification for NO emission was shown by many researchers (e. g. Gasche and Papen, 1999; Venterea and Rolson, 2000; Luo et al., 2012) for various ecosystems. Denitrification is a biological stepwise reduction of NO_3^- into NO_2^-, NO, N_2O and N_2 (Zumft, 1997; Skiba, 2008). Classical (heterothrophic) denitrification is attributed to facultative aerobes organisms (including bacteria, archaea and fungi), which under O_2 depletion can switch to anaerobic respiration (Hayatsu et al., 2008; Skiba, 2008). Nitrifier denitrification is a process, when ammonia oxidizing bacteria at low O_2 condition reduce NO_2^- to NO, N_2O and N_2 (Wrage et al., 2001; Skiba, 2008). Heterothrophic denitrification is attributed to facultative aerobes organisms under O_2 stress (Hayatsu et al., 2008; Skiba, 2008). Nitrifier denitrification is a process, when ammonia oxidizing bacteria under low O_2 condition reduce NO_2^- to gaseous N compounds (Wrage et al., 2001; Skiba, 2008). Denitrification is controlled by soil moisture content, soil temperature, N-NO_3^- availability, soil properties and management practice (Zumft et al., 1997; Skiba, 2008). This process associated with high NO production as an obligatory intermediate in a step from nitrate to nitrous oxide (Skiba et al., 2008; Russow et al., 2009), but not related with high NO emission, that was explained by 'diffusion limitation' hypothesis (Firestone and Davidson, 1989; Skiba et al., 1997; Russow et al., 2009) when up to 100% of nitric oxide produced under anaerobic condition are trapped and converted into N_2O.

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THE INFLUENCE OF AMINO ACIDS AND MONOSACCHARIDES ON *BACILLUS THURINGIENSIS* IMV B-7324 FIBRINOLYTIC PEPTIDASE STABILITY

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Thermostability is the enzyme property which depends on composition of hydrophilic and hydrophobic amino acids, carbohydrates, ionic interactions, presence of metal and disulfide bridges. The biotechnology and engineering enzymology require carrying out many enzymatic processes at the strict conditions: high temperature, presence of organic additions etc. It was shown that the purified fibrinolytic peptidase of *Bacillus thuringiensis* IMV B-7324 is stable at 20-60 °C during 2 h. The aim of this study was investigation the influence of amino acids and monosaccharides which were observed in the fibrinolytic peptidase on its stability.

It is known that hydrophobic amino acids are required to stabilization of protein structure. It was shown that the fibrinolytic peptidase *B. thuringiensis* IMV B-7324