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## Characteristics of the Chemical Composition and Carbohydrate/ Protein Fractions along with the Growth of Alkali-Grass (*Puccinellia tenuiflora*) as Feed for Ruminants

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**Presenter Information**

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## Characteristics of the chemical composition and carbohydrate/protein fractions along with the growth of alkali-grass (*Puccinellia tenuiflora*) as feed for ruminants

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**Key words :** alkali-grass, protein/carbohydrate fractionation, alkalinized lands, ruminant, feedstuff

**Introduction** Alkali-grass (*Puccinellia tenuiflora*), a perennial plant in the *Poaceae* family, grows well in heavily alkalinized, high pH soils presumably due to its neutralizing effect on alkali soil. Alkali-grass can be fed to ruminants, but the optimum combinations with other feedstuffs are unclear because the chemical composition of alkali-grass has not been evaluated in detail. Therefore, the present study was conducted to clarify the characteristics of carbohydrate/protein fractions along with the growth of the plants.

**Materials and methods** Alkali-grasses cultivated for three years in the alkalinized region in Jilin Province of China were harvested at four stages: vegetative, reproductive (flowering and post-flowering) and post-reproductive growth phases. The carbohydrates and proteins of the growing alkali-grasses and control samples (*Aneurolepidium chinense*, alfalfa and timothy hay) were fractionated according to the methods of a net carbohydrate and protein system (Hall *et al.*, 1988; Licitra *et al.*, 1996).

**Results and discussion** Analysis of the chemical composition of alkali-grass showed that the crude protein contents of the plant were relatively high and decreased from the vegetative to reproductive stages (from 17.5 to 13.2% DM), but it was very low after post-reproductive stage (7.1%). It was also demonstrated that alkali-grasses of the vegetative and reproductive stages had very high levels of protein A fraction which mainly consists of NPN (non protein nitrogen; about 50% of CP) and very low levels of carbohydrate A and B<sub>1</sub> fractions, which mainly consist of saccharides, organic acids, starches and pectin. On the other hand, alfalfa hay had higher levels of protein B<sub>1</sub> and carbohydrate A and B<sub>1</sub> fractions than those of the growing alkali-grasses, *Aneurolepidium chinense* and timothy hay.

**Conclusions** It was demonstrated in the present study that the growing alkali-grass contains relatively high levels of CP, very high level of NPN and very low levels of soluble carbohydrates, showing that combination of alkali-grass and alfalfa hay as feed for ruminants would be best for compensate of nutrient balance among the feedstuffs used in the present study.

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