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## Study on total saponins contents of legumes during growing season

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**Key words :** *Medicago L . Astragalus sinicus L . , Onobrychis viciaefolia Scop ; Lotus corniculatus L . , Coronilla varia L .* , total saponin content

It was reported that there was abundant total saponins in alfalfa , but little research about total saponins has been done in *Astragalus sinicus L . , Onobrychis viciaefolia Scop , Lotus corniculatus L . , Coronilla varia L* . Total saponins of several legumes were determined in different plant parts and growth stages , in order to provide scientific basis for extracting saponins and comprehensive use .

**Material and method** Four legumes species ( *Astragalus sinicus L . , Onobrychis viciaefolia Scop . , Lotus corniculatus L . , Coronilla varia L .* ) and four alfalfa cultivars ( Gannong No 3 , Xiniang Daye , White flower alfalfa and low fibre alfalfa ) were planted in Jintai County of Gansu Province . The colorimetric method was used for quantification of triterpene saponins using vanillin reagents as colorants , which detected on wavelength , accuracy , reproducibility and stability . The colorimetric method was simple , it had high accuracy and reproducibility , with excellent stability in 25 min . Total saponin contents in different parts of several legumes was determined at seedling stage , bud stage , early flowering , flowering and pod stage , respectively .

**Result and discussion** The result showed that several legumes had different contents of total saponin at different growth stages . The contents of total saponin in *Astragalus sinicus L . , Onobrychis viciaefolia Scop . , Lotus corniculatus L . , and Coronilla varia L* were lower than that in four alfalfa cultivars . The contents of total saponin in these legumes had significant difference in stem , leave and flower (  $P < 0.01$  ) . In the whole growing season , the content of total saponin in leave was higher than that in stem . *Onobrychis viciaefolia Scop* had the least content of total saponin in flower , but others had the greatest content of total saponin in flower .

**Conclusions** The colorimetric method was used for quantification the content of total saponin in legumes using vanillin reagent . Because of the low content of total saponins in the whole growth season , *Lotus corniculatus L . and Coronilla varia L* should be mowed when the yields of aerial parts reached the peak . *Astragalus sinicus L . and Onobrychis viciaefolia Scop* had the lowest total saponins at early flowering stage , so it was the best time to use them as fresh-forage or hay , and for extracting total saponins at flowering stage to achieve the highest contents . Alfalfa was good materials for extracting total saponins because of the higher contents ; but we should establish a scientific and reasonable grazing law when using them as forage .

### Reference

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