

EFFECTS OF COMMON MALLOW (*MALVA SILVESTRIS* L.) ON ANTIOXIDANT ACTIVITY OF JENNY MILK

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ABSTRACT - Dehydrated common mallow (*Malva sylvestris* L.) capsules have been fed to jennies in lactation as a supplementary food to evaluate their effect on the antioxidant activity of milk. Common mallow is widespread in Mediterranean pastures and its nutraceutical properties are known. Jennies were divided into 2 equal groups, one group receiving the additional dietary supplement of mallow capsules. Milk was collected at day 30 post foaling and every 30 days for 4 times. In this period we have also surveyed the flora of the pastures near the farm. The chemical composition and the antioxidant characteristics of milk from two groups were determined. No differences were observed in chemical composition. The antioxidant activity (ABTS essay) resulted significantly higher ($P < 0.05$) in the treated group in the last control only (79.54 vs 55.52%).

INTRODUCTION - Donkeys can graze a relatively high number of plant species, in this revealing their characteristic as rural animals adaptable to marginal lands. In the natural pastures of Basilicata where this specie is reared is present also the common mallow (*Malva sylvestris* L.), a biennial-perennial herbaceous plant native of Europe, northern Africa and Asia, now naturalized in the Americas. It is known for its medicinal properties and consumed by human as a natural remedy, as a nutraceutical and is commonly used in cosmetics, because of its emollient and anti-free radicals properties. Some of the biological activity of this plant may be due to antioxidants, such as polyphenols, vitamin C, vitamin E, and β -carotene^{1,2}. The antioxidant capacity is higher in flowers, leaves and leafy flowered stems than in fruits. Because of its properties and its widespread occurrence in the rangelands of southern Italy as well as its high palatability we have assessed a possible antioxidant effect on jenny milk. To assure the ingestion of the plant by the animals dehydrated capsules of leaves and flowers were given.

MATERIALS AND METHODS - Eight pluriparous jennies which foaled in July 2010 were investigated postpartum during four months. The study was carried out in a rearing farm situated near Avigliano in Basilicata at the altitude of 700 m a.s.l.. The jennies were kept in box stalls with paddocks without access to pasture, and divided into 2 groups. Each group was fed with a *ad libitum* diet of 3.0 kg/d of a concentrate mixture and oat hay. In the experimental group were administered 9 common mallow capsules/day (*Malva* - Erboristeria Angelini - ABTS test, 80.26%). Milk samples were collected monthly, starting from the 2nd post-foaling month; in the period August-November individual samples were collected and refrigerated at 4 C. The following parameters were measured: protein, fat, and lactose by Milkoscan FT 6000; dry matter and ash content³. In addition, the antioxidant activity was measured in percentage by ABTS and DPPH test⁴. Differences between means were tested by Student's *t*-test.

vs 0.29%; lactose, 6.37 vs 5.98%; ashes, 0.40 vs 0.45% (in the control and in the treated group, respectively) (fig.1). The antioxidant activity (ABTS test) resulted significantly higher ($P < 0.05$) in the treated group in the last control only (79.54 vs 55.52 %) (fig.2). Regarding the rangeland flora in the areas interested to donkey rearing, a few data are available from a survey in areas near Avigliano carried out in the Fall, and grazed by donkeys. At the time of the visit, *Agrimonia eupatoria* L., *Dorycnium pentaphyllum* Scop., *Prunus spinosa* L. *Prunus* spp., *Quercus cerris* L. and some grasses: *Dactylis hispanica* Roth. *Phleum pratense* L., *Holcus lanatus* L., and *Malva sylvestris* L, were recorded.

Fig.1 - Jenny milk: chemical parameters within sampling (1-4), (mean \pm s.e.).

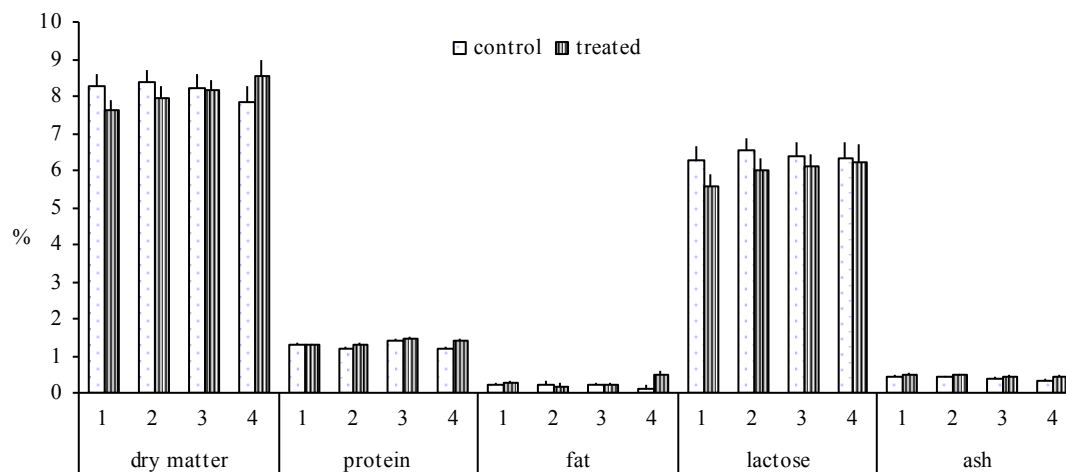
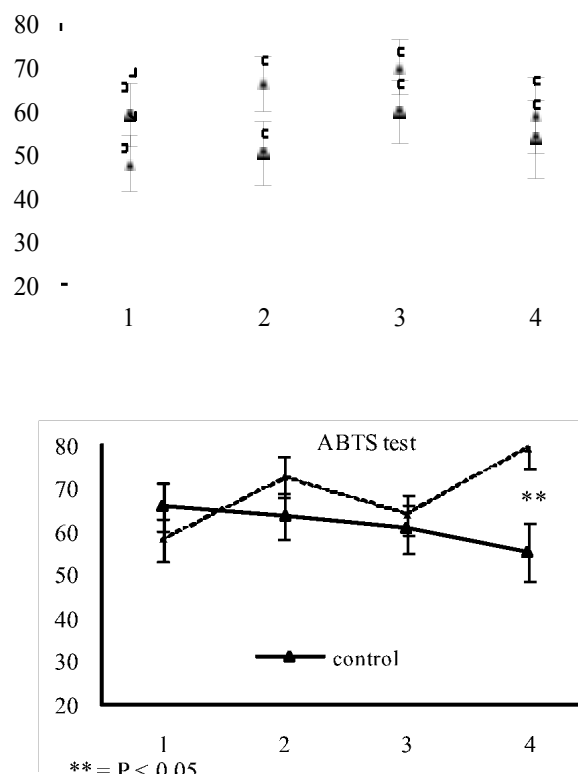


Fig. 2 – Antioxidant activity, % (mean \pm s.e.).



DISCUSSION – The antioxidant activity has shown significant values in the experimental group as compared to the control group only in the last test. Our

preliminary conclusion is that the presence of the common mallow in natural pastures might contribute to increasing the antioxidant activity of jenny milk. Of course, more work is necessary to assess if this is actually the case, and the next step will be the use of the actual plants from the grassland.

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