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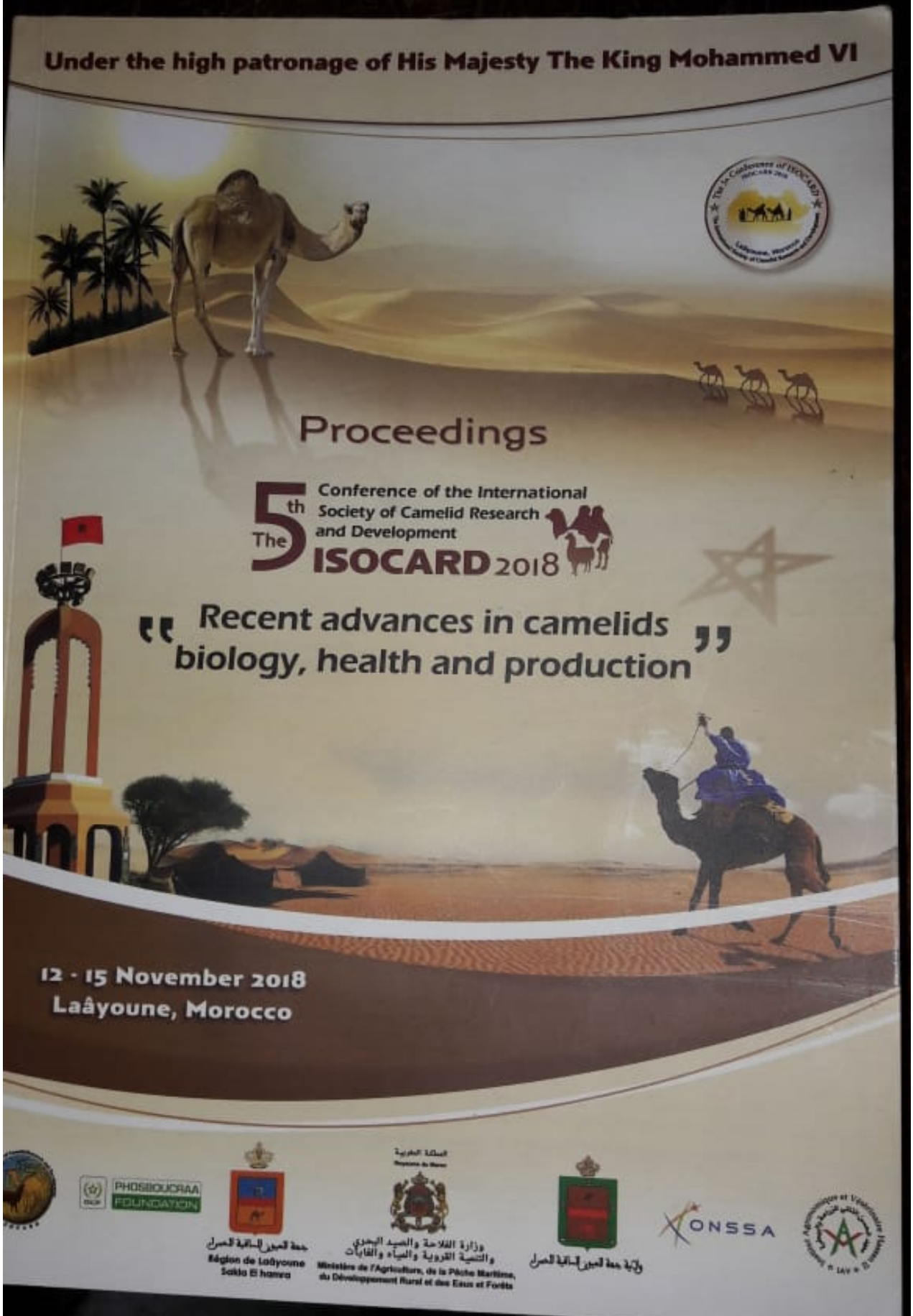

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ولاية جهة العيون الساقية الحمراء

ONSSA

TABLE OF CONTENT

Effect of the season on the fatty acid composition of lipids in camel milk

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Abstract

In order to have a high variability in fatty acid composition, the healthy animals were randomly selected from South Kazakhstan during 4 different seasons where the whole 23 of milk samples were collected. The number of milk samples was balanced between winter (n=6), spring (n=4), summer (n=7) and autumn (n=6). Milk was collected at milking time at the end of milking. It was stored in icebox up to the laboratory then frozen at -20°C up to the analysis. Gas chromatography and lipids of camel milk were carried out on the device Carlo Erba instrument, model GC 8000 Top (Erba Science). In this paper, we used capillary column SUPELCOWAX length of 30 mm and a width of 0.32 mm and a flame ionizing detector (manufacturer: SUPELCO, Bellefonte, USA). As the carrier gas, helium was used. Was chosen the optimal transmission rate for chromatography of lipids of camel milk - 2 ml/min. Gas chromatograph pre etalon samples following fatty acids:

- Saturated volatile, water-soluble fatty acids: butyric (C4), caproic acid (C6);
- Saturated volatile, insoluble in water: caprylic acid (C8), capric acid (C10);
- Saturated nonvolatile, insoluble in water: lauric acid (C12), myristic acid (C14), palmitic acid (C16), stearic acid (C18), arachidic acid (C20);
- Unsaturated fatty acids: palmitoleic acid (C16: 1), oleic acid, omega 9 (C18: 1 (ω-9)), vaccenic acid omega 7 (C18: 1 (ω-7)), omega-6 linoleic acid (C18: 2 (ω-6)), linolenic acid (C18: 3), eicosenoic acid (C20: 1).

The composition of fatty acids in camel milkdepends on the season. Observed fluctuations for certain fatty acids, was influenced by season.During the year the content of saturated fatty acids varies greatly.Observingfluctuations in the concentration of butyric acid in a year, in spring and autumn, thecontent increased by 0.2 % and 0.3 %, respectively. The same concentration of hexanoic acid (0.1%) was observed inwinter, spring and summer. Content incaprylic acid during spring season (C8) 2 times higher than in winter. Content incapric acid (C10) in winter and spring increased by 23.2% and 25.6 %, respectively, decreased by 4.8% in the summer and increased in autumn 7.8 % ($P \leq 0,05$).Summer milk samples was rich in palmitic acid (C16) 29.0%. Autumn milk samples were characterized by high concentration of saturated fatty acids, due to the presence of myristic (16.6 %) and stearic acid (23.5 %) ($p \leq 0,05$). Spring, summer and winter samples of camel milk fat contain "useful" combination of fatty acids.Fatty acid composition of camel milk fat can be explained by some dietary properties known for long time and used in traditional medicine, but did not have to date scientifically sound explanation. Camel milk fat has nutritional properties, is a source of energy for the biochemical processes in the living organism, easily accessible and has different valuable nutritional properties compared to other dairy fats. Low molecular weight volatile fatty acids (C4 - C10) of fresh dairy fat determine its odor acid with a chain of 12 or more carbon atoms and is practically odorless and tasteless. Physiological value-fat milk and dairy products camelsis due tosaturated (C10 - C14) and essential fatty acids (C18: 2 (ω-6), C18: 3 and C20: 1). As it is known, the lack of polyunsaturated fatty acids in an organism provokes various diseases. Besides pleasant taste of camel milk fat milk and its derivatives ennobling, causes homogeneity and ductility of the structure and consistency of the fatty acids.

Keywords: *Camel milk, fatty acids, lipids, season, monounsaturated fatty acids, polyunsaturated fatty acids*