Processing Influence on the Oxidation Level of Sunflower Oil

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The important task of oil and fat producers is to prevent their oxidation. But a lot of stages of oil and fat processing are still accompanied by increase of oxidation products level.

Our research is devoted to the investigation of sunflower oil oxidation during its processing (storage and refining). We have investigated free fat acids content, peroxide and anisidine value of sunflower oil during its storage, neutralization, bleaching, winterization and deodorization. We demonstrated that free fat acids content decrease due to neutralization and deodorization and it was rather low in RBD oil. Peroxide value increased more than three times during storage and neutralization, but we observed very low peroxide value after bleaching and insignificant rise during storage of packed RBD oil.

The investigated oil had low anisidine value during storage and neutralization, but it demonstrated huge increase after bleaching. This value slowly decreased after deodorization but then demonstrated rise during storage of packed RBD oil. So we detected inverse dependence between peroxide and anisidine value during bleaching.

We have also studied influence of bleaching condition on changes of peroxide and anisidine value. Firstly, we increased the adsorbent amount for bleaching twice. Our results indicate that in such conditions peroxide value decreased to the lowest level, but anisidine value didn't drop. Then we conducted two successive bleaching of oil with normal amount of adsorbent. In this case only some insignificant decrease of anisidine value was observed, although it was still too high. Thus it was impossible to remove substances of second oxidation during bleaching.

All things considered we have concluded that high level of peroxides in crude oil induces high anisidine value in RBD oil.