The interaction and physical/structural effects of aroma compounds, at high concentrations on dry native starch granules were studied using eight selected model compounds: acetaldehyde, dimethyl sulphide, diacetyl, allyl isothiocyanate, ethyl butyrate, citral, octanol and butyric acid. The maize, potato and pea starches used represent different typical structural and chemical starch characteristics. Retention of the different aroma compounds varied from a few to one hundred percent and starch was found to induce as well as reduce aroma evaporation depending on the aroma compound and the starch type. As deduced from DSC, powder XRD and SEM analyses, citral, butyric acid and octanol exerted specific effects on the starch granules manifested in local melting of crystalline layers and partial disruption of the granular meso structure. The most prominent effect was obtained with citral that generated surface wrinkles on B- and C-type polymorphic granules and aggregation of A-type polymorphic granules, decreased the melting temperature and suppressed the crystallinity of the starch.

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