PILLAR 3. IMPROVING APPEAL AND NUTRITIONAL VALUE OF PROCESSED FRUIT

The pillar is composed of 4 packages, 3 of which are directed toward final products and one deals with fruit components in the pomace.

WP3.1 – Stability and quality of minimally processed fruits and novel products (MPFRUIT)
WP3.2 – Attractiveness and quality of direct juices, nectars and concentrates (JUICETHIRSTY)
WP3.3 – Dried fruit (DRYFRUIT)
WP3.4 – Dietary fibre and fruit phytocomponents concentrates for enrichment of processed fruit and food products (COMPONENTS)

In work package MPFRUIT new generation of added value extended shelf-life fruit products (apples, apricots, peaches, fruit salads and related items) with high levels of quality, consumer acceptance, nutritive value and safety will be developed using a range of minimal processes. To achieve this objectives during the first 18 months 6 of 8 tasks planned for the whole project will be realized: selection of raw material and investigation of its interaction with the minimal processing techniques on product quality attributes; minimal processing using wide range of procedures including alternative techniques to chemicals in order to maintain the microbial stability of the products; chilling, freeze-chilling, mild heat treatment (such as sous vide), packaging and combinations of some of these techniques/technologies; a fast and secure industrial process to pasteurise or cook different fruit products using modern processing techniques such as microwave process will be developed and validated. Safety and microbial stability of products will be of special interest and will be addressed to in two tasks; one is dealing with the effect of those novel technologies on the indigenous microbiota and on foodborne pathogens, the other is devoted to the study effects of alternative techniques to chemical preservatives in prevention of microbial growth and thus, microbial stability and safety. From this tasks, six deliverables will be achieved during the first 18-months.

The JUICETHIRSTY is focusing on two areas; selection of raw material for processing and improvement of technology of juice production having in mind higher quality product for the benefit of EU consumers. The work package has been split into 6 tasks, all of which will be executed from the start point. The work will cover investigation of several promising for pro-ecological production cultivars of apple, sour cherries, plums and black currants. In case of apples emphasis will be put on scab resistant cultivars considering need for high quality raw material, with low level of residues. Work on technology will aim at increasing extraction (which still creates a serious problem, even if specific enzymes are used) from fruit mash to juice of valuable for the consumers’ phytocomponents, to obtain product closer in composition to fresh fruit than at present. For red fruit extraction at lower temperatures than normally used in the industry will be investigated using new generation enzymes, including those developed within the MAXFUN EU project. During the first 18 months expert panel will be used to support decision on selection of raw material and optimising quality of direct, cloudy and clear juices or nectars. Moreover within JUICETHIRSTY large amounts of well characterized clear, cloudy juices and apple puree will be produced from the same raw material for the intervention studies to elucidate their health effects.

The aim of DRYFRUIT is development novel, convenient, fruit based dried products characterized with high retention of biologically active compounds, which offer to
different target consumers’ groups could satisfy their needs and contribute to increase of processed fruit consumption. The route to achieve this is optimizing combined technologies of osmotic dehydration and drying or freezedrying, taking into account the compromise with the sensorial and nutritional quality of the final product. During the first 18 months detailed knowledge on the interaction between mass transfer phenomena and reactions leading to the formation of compounds involved in the definition of the nutritional, safety and/or organoleptic quality of the products will be accumulated. Raw material will be selected and batches of dried fruits produced and tested. The complexity of the work planned is explained on Pert graph and time to achieve deliverables on Gantt graph.

The overall objectives of **COMPONENTS** are improvement of extraction, purification, separation and characterization of biologically active compounds derived from fruit mash/pomace of apples, sour cherries, black currants and plums, and investigation of the influence of isolated bioactive components on quality and stability of supplemented products During the first 18 months all tasks will be realized to develop methods, prepare concentrates and analyse them using advanced methods of analysis (Task 3.4.3). By doing some basic investigations on chemical components, retained in the pomace, not only knowledge on juice technology will be enlarged, but it will bring new ideas for improvement of juices and derived products quality and rational utilisation of pomace. Trials will be undertaken to stabilize red fruit juices by addition of extracted from apple components. For production of large amounts of phytocomponents VDV will be engaged. The duties will be shared between partners according to their level of expertise.