Is a Generalized NJL Model the Effective action of Massless QCD?

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A local and gauge invariant alternative version of QCD for massive fermions introduced in previous works, is considered here to just propose a theory which includes Nambu-Jona-Lasinio (NJL) terms in its defining action in a renormalizable form. The Lagrangian includes a special kind of new vertices which at first sight, look as breaking power counting renormalizability. However, these terms also modify the quark propagators, to become more decreasing that the Dirac propagator at large momenta, indicating that the theory is renormalizable. Therefore, it follows the surprising conclusion that the added NJL four fermions terms does not break renormalizability. The approach, can also be interpreted as a slightly generalized renormalization procedure for massless QCD, which seems able to incorporate the mass generating properties for the quarks of the NJL model, in a renormalizable way. The structure of the free propagator, given by the substraction between a massive and a massless Dirac one in the Lee-Wick form, also suggests that the theory retains unitarity, if the radiative corrections make the massless quarks become non propagating. The appearance of finite masses in the theory is justified by the fact that the new action terms break chiral invariance. The scheme looks as being able to implement the Fritzsch Democratic Symmetry breaking approach to quark mass hierarchy. It seems also possible to further link the theory with the SM after employing the Zimmermanns coupling constant reduction scheme in a similar way as the Top quark condensation model had been approximately reformulated as a Higgs field one.